REFERENCES

References given in the consolidated text or cited by the authors of the individual FAO manuscripts relating to traditional milk products in the following geographical areas:-

Aneja, R.P. (1989) India and neighbouring countries including the Himalayan region.

Bekele, E. (1989) Peoples Democratic Republic of Ethiopia and The Republic of Mail.

Brito, C. (1988) Southcone countries of Latin America.

Kronflleh, A.R. and Labban, L. (1988) Syria.

Kurwijila, L.R. (1989) Southern and eastern Africa.

Nembang, L.B. (1989) Himalayan area - Nepal and Bhutan.

Abate, A.M. Wanyoike and A.N. Said (1987). Milk production under integrated systems in Kenya. In: Dairy Development in E. Africa. Proc. IDF Seminar. Nairobi. 9–13 March 1987. IDF/FIL Bull. No. 221.

Agren G. and Gilson R. (1986). Food composition table for use in Ethiopia.

American States Organization (1984). Agricultural Cooperation Interamerican Institute. Uruguayan dairy exploration. Montevideo.

Aneja, R.P. (1989). World survey of traditional milk products. India and neighbouring countries including

the Himalayan region. FAO Manuscript.

Argentinian Economic Ministry (1987). Cattle breeding and agricultural secretary. Milk and dairy product statistics. Buenos Aires.

Bekele, E. (1988). Traditional milk technology in parts of the Federal Republic of Nigeria and the Republic of Mali. ILCA, Addis Ababa (in Press).

Bekele, E. (1989). Technology of traditional milk products of the Peoples Democratic Republic of Ethiopia and The Republic of Mali. FAO Manuscript.

Bekele, E. and Kassaye, T. (1987). International Livestock Centre for Africa, Newsletter, Vol. 6, No. 4.

Bessel, J.E. and Daplyn, M.G. (1977). Dairying in Zambia: The traditional sector. UNGZAMI Bull. No. 3.

Bluhm, K. (1973). New regulations on smoking of meat. Fleichwiss. 53 (10) 1389–1392. Ref. Fd. Sci. Technol. Abstr. 6: 2069.

Boor, K.J., Brown, D.L. and Flitzhugh, H.A. (1987). Western Kenya: The potential for goat milk production. World. Anim. Rev. 62: 31–39.

Brito, C. (1985). Technological aspects and characterization of the farm Chanco cheese. Alimentos 10(3) 41–46.

Brito, C. (1987). Farm Chanco cheese: Present situation. Proxima Decada No. 60, Sept. 1987.

Brito, C., Jofre, H., Oettinger, G., Haverbeck, J. and Horzella, M. (1985–87). Diagnosis of farm Chanco cheese and applied technology development for its production. 1st step 1985. 160 p. Report

No. 1 Dec. 1985. 2nd step 1986 p. Report No. 2 Dec. 1986. 3rd step. 1987. p. Report No. 3 Dec. 1987.

Brito, C. (1988). FAO World survey on traditional milk products. Southcone countries of Latin America. FAO Manuscript.

Brumby, P.J. and Gryseels G. (1984). Stimulating milk production in milk-deficit countries of Africa and Asia. ILCA Bulletin. 19: 2–7.

Brumby, P.J. and Gryseels G. 1986. Stimulating milk production in milk deficit countries of Africa and Assia. Paper presented at the international conference on milk production in developing countries, University of Edinburgh, Centre for Tropical Veterinary Medicine, 2–6 April, 1984.

Campos, J., Vidigal, C.F., Barros, G.A. and Levy J.E. Perspectives for the development of the dairy industry in the State of Minas Gerais. Candido Tostes Inst. Journal ILCT 35 (210) p. 3–5.

Cantoni, C., Dragoni, I., L'Acqua, V. (1973). Phenol and formaldehyde contents of smoked foodstuff. Industrie Alimentari 12: 77. Ref. Dairy Sci. Abstr. 36: 72.

Caseres, V. Dairy industry in Argentina. V Latin American Seminar of Food Science and Technology. Vina del Mar. 13–16 October 1985.

Cattle breeding, Agricultural and Fishing Ministry of Uruguay/FAO. 1st Seminar on Milk Quality. Montevideo 21–23 Nov. 1983.

Cattle Breeding, Agricultural and Fishing Ministry of Uruguay/FAO. Milk statistics information. Montevideo May 1987.

Chema, S. (1984). Milk production in Kenya. In: The potential of small scale milk production in Eastern

and Southern Africa. IDRC Manuscript Report MR 98e: 34–47.

Cherrey, G. (1977). 3rd Dairy National Congress in Brazil. Candido Tostes Inst. Journal ILCT 32 (191) 27–46. 1977.

Chilean Agricultural Ministry (1988). Milk Bulletin for 1987 Santiago de Chile.

Central Bureau of Statistics, Syria (1988). Statistical Abstract.

Dairy Development Agency (1971). Dairy marketing survey and improvement policy.

Dairy Panamerican Congress (1982). Dairy Industry Center. 63rd Exercise 1981–1982. Memory Buenos Aires.

Devendra, C. (1975). Biological efficiency of milk production in dairy goats. Wld. Rev. Anim. Prod. Vol XI (1): 46–53.

FAO (1974). International scheme for the Coordination of Dairy Development, Ethiopia, FAO, Rome.

FAO (1974–1977). Production and Trade Year Books.

FAO/WHO (1975). Technical Series No. 576. Evaluation of certain food additives. Some food colours, thickening agents, smoke condensates and certain other substances. 19th Report of the Join FAO/WHO Expert Committee on Food Additives, 1975.

FAO Production Yearbook (1983). Publ. FAO, Rome.

FAO Milk and milk products (1985). Supply and demand and trade projections, Rome.

FAO Trade Yearbook (1985). Publ. FAO Rome.

FAO (1987). World crop and livestock statistics - 1948–1985. Publ. FAO, Rome. 1987.

FAO (1987). FAO Production Yearbook. Vol 40. Rome.

FAO/Chile. National seminar on dairying's role in rural development. Santiago, Chile, 5–9 Nov. 1984. Documents i-xii below:-

i. FAO/Chile. Blanco, R. and Arias, S. National Document of Paraguay and National Document of Peru.

ii. FAO/Chile. Caprellini, O. and Delleplane, G. National Document of Argentina.

iii. FAO/Chile. Dubach, J. Operative options to dairy development. Thirty years of experience over rural cheesemakers.

iv. FAO/Chile. Fernandez, A. Milk production ways used in Latin America and mechanisms to help.

v. FAO/Chile. Furtado, M^0. Artesanal milk processing in Latin America. Present situation and future perspectives.

vi. FAO/Chile. Ibarra, A. Milk processing in big factories in Latin America.

vii. FAO/Chile. Vasquez, L. Principles for the justification of some policies for small dairy producers.

viii. FAO/Chile. Winkler, A. Preliminary antecedents over the role of dairying in rural development. Chilean case.

ix. FAO/Chile. Bolivian National Document.

x. FAO/Chile. Brazil National Document.

xi. FAO/Chile. Chile National Document.

xii. FAO/Chile. National Document of Uruguay.Feleke, G. (1987). The status of the dairy industry in Ethiopia. Paper presented for FAO Regional Seminar on development trends in small scale milk production and processing, Nairobi, 2–7 March, 1987.

Frenzel, O. (1980). Dairy production and consumption in Brazil 1979. Candido Tostes Inst. Journal ILCT 35 (211) 9–13, 1980.

Gaimari, S. Personal communication to C. Brito.

Gall, C. (1975). Milk production from sheep and goats. Wld. Anim. Rev., 13: 1–8.

Grandin, B.E. (1987). Pastoral culture and range management. Recent lessons from Maasailand. ILCA Bull. 28: 7–13.

Gubler, D. and Vernois, M. (1972). New smoking techniques. Industrie Alimentaires et Agricoles 89 (5): 621 Fd. Sci. Technol. Abstr. 6: 91974.

Inciarte, R. (1985). Milk production in South America. V Latin American seminar on food science and technology. Vina del Mar 13–16 October 1985.

IDF (1968). Bacteriostatic properties of milk from tropical countries. Ann. Bull. part IV. Publ. IDF. Brussels.

IDF (1969). Properties of cows, ewes and buffalo's milk in the Socialist Soviet Republic of Armenia. Publ. IDF, Brussels.

International Development Research Centre (1980). Nutritional status of the rural population in the Sahel, (Report of a working group, Paris, France). IDRC, Ottawa.

International Land Development Consultants B.V. (ILACO) (1973). Shola Dairy Industry. Draft Final. Arnhem, Netherlands.

International Livestock Centre for Africa (1979). Economic trends - dairy products ILCA Bulletin No. 4 Addis Ababa.

Kakunze, V. (1984). Dairy production in Burundi. In: The potential for small scale milk production in eastern and southern Africa. IDRC Manuscript Reports MR 98e: 27–31.

Kaluba, E.M. (1984). Milk production systems in Zambia. In: The potential for small scale milk production in eastern and southern Africa. IDRC Manuscript Reports. MR 98e: 103–109.

Kedebe, B (1984). Improving Ethiopia's milk production. In: The potential for small scale milk production in eastern and southern Africa. IDRC Manuscript Reports MR 98e: 19–26.

Kerven, C. (1987a). Some research and development implications for pastoral dairy production in Africa. ILCA Bulletin No. 26: 29–35.

Kerven, C. (1987b). The role of milk in a pastoral diet and economy: The case of South Darfur, Sudan: ILCA Bulletin No. 27: 18–27.

Khvan, E.A., Shaposhnikov, Y.K., Radakova, T.N., Alsufleve, V.A. and Kondakova L.V. (1976). Ref. Fd. Sci. Technol. Abstr. 8: 82.

Knowles, E.M., Gilbert, J. and McSweeney, D.J. (1975). Phenols in smoked meats. Phenolic composition of commercial liquid smoke preparations and derived bacon.

Kornreich, M.R. and Issenberg P. (1972). J. Agric. Fd. Chem. 20: 1109.

Kronflleh, A.R. and Labban, L. (1988). The situation of milk production, processing and marketing in Syria. FAO Manuscript.

Kumwenda, M.S.L. (1984). Small holder dairy development in Malawi. In: The potential for small scale milk production in eastern and southern Africa. IDRC Manuscript Reports MR. 98e: 48–57.

Kurwijila, R.L. (1988). Some reflections on milk supply and consumption statistics in Tanzania with particular reference to the role of the traditional cattle herds. Proc. Tanzania Soc. Anim. Production Vol. 15: (In press).

Kurwijila, L.R. (1989). Traditional dairy products in southern and eastern Africa. FAO Manuscript.

Kurwijila, R.L., Hansen, K.K. and Ryoba, R. (1988). Some experience on goat milk utilization. In: Improved dairy production from cattle and goats in Tanzania. Part II. NORAGRIC Decasional paper No. 98.

Lan-Bon Chen and Issenberg, P. (1972). J. Agric. Fd. Chem. 20.

Leeuw, P.N., Bekure, S. and Granding, B.E. (1984). Aspects of livestock productivity in Maasai group ranches in Kenya. ILCA Bulletin 19: 17–20.

Lohay, A.B. (1988). Contribution of livestock sector to meet the national nutritional target: Contribution from dairy (milk and milk products) Proc. 15th Sci. Conf. Tanzania Soc. Anim. Prod. (In press).

Madsen, A. and Mtenga, L.A. (1988). Performance of Norwegian - Tanzania crossed dairy goats in a small holder husbandry system introduced in upper Mgeta: Preliminary results. Proc. 15th Sci. Conf. Tanzania Soc. Anim. Prod. (In press).

Majubwa, M.S. (1987). A study of the level and pattern of milk production and marketing in some Maasai villages in Morogoro District. Sp. Project Report. B.Sc. Sokoine University of Agriculture.

Mansur, M., de Souza, Meloiza and Valentin, A. (1980). Fresh Minas cheese manufacturing without added starter culture. Candido Tostes Inst. Journal 35 (207) 15–21.

Mansur, M., Wolfschoon-Pombo, A., Valentin, A., de Souza, M. (1980). Conclusive study on manufacture of Minas frescal cheese by different cheese processing techniques. Candido Tostes Inst. Journal ILCT 35 (208) 13–16.

Martins, L. (1981). Country cheese producers in the south-east region of Minas Gerais. Candido Tostes Institute. Journal 36 (215). 40–41.

Mavuso, J. and Dlamini, S. (1984). Milk production potential for small-scale farmers in Swaziland. In: The potential for small-scale milk production in eastern and southern Africa. IDRC Manuscript Reports MR 98e: 60–74.

Mbogoh, S.G. (1984). Dairy development and dairy marketing in sub-Saharan Africa: Some preliminary indicators of policy impacts. ILCA Bulletin. 19: 8–16.

Mbogoh, S.G. (1984). Dairy development and internal dairy marketing in sub-Saharan Africa: Performance, policies and options. ILCA Livestock Policy Unit Working Paper No. 5. Addis Ababa.

Ministry of Agriculture, Ethiopia (1979). National development strategy for the animal resources in Ethiopia. Animal Resources Department.

Ministry of Agriculture, Ethiopia (1980). National artificial insemination development project. Project Centre Planning and Programming Services.

Ministry of Agriculture and Agrarian Reform, Syria. Annual statistics abstract.

Morton, S. (1988). The decline of Lahawin pastoralism (Kassala Province, eastern Sudan). Pastoral Dev. Network. Paper 25c Overseas Dev. Institute, London, U.K.

Mpelumbe, I.S., Hedley, B.R. and Scotland, J.A. (1978). Contribution of small-scale dairying to the dairy industry. Proc. 5th Sci. Conf. Tanzania Soc. Anim. Prod. 5: 45–54.

Mucciolo, P. (1977) Aspects of milk inspection in Brazil. Candido Tostes Inst. Journal ILCT 32 (194) 15–19.

Mupunga, E.G. (1987). A summary of the dairy industry in Zimbabwe. Proc. FAO regional seminar on development trends in small-scale milk production and milk processing 2–7 March, 1987. Nairobi, Kenya. (In press).

Musangi, R.S. (1971). Dairy husbandry in eastern Africa. Publ. Longman, Dar-es-Salaam, Kampala, Nairobi.

National development strategy for the animal resources of Ethiopia, 1980–1990.

National Institute of Pecuarian Research and Promotion (1987). National programme on cattle breeding. Policies for research, generation of technology and training - artesanal cheesemakers at Peru. Lima, March 1987.

National Milk Development (1985). Saint Cruz Regional Council. Santa Cruz milk sector diagnosis and policies. Santa Cruz, Bolivia, June 1985.

Nembang, L.B. (1989). A report on traditional milk products in the Himalayan area. FAO Manuscript.

Nicholson, M. (1983). Calf growth, milk offtake and estimated lactation yields of Boranna cattle in the southern rangelands of Ethiopia. JEPSS Research Report No. 6. ILCA Addis Ababa.

Nicholson, M.J. (1984). Pastoralism and milk production. ILCA Bull. 20: 23–28.

O'Mahony, F. and Bekele E. (1985a). Traditional butter making in Ethiopia and possible improvements. Addis Ababa, ILCA. ILCA Bulletin No. 22.

O'Mahony, F. and Peters, K.J. (1987a). Options for smallholder milk processing in sub-Saharan Africa. ILCA Bull. 27: 2–17.

O'Mahony, F. and Peters, K. (1987b). Sub-Saharan Africa. Options for smallholder milk processing. World Anim. Rev. 62: 16–30.

Osman, A.O. (1987). The technology of Sudanese white cheese, “Gibna bayda”. In: Dairy Development in eastern Africa. Proc. IDF Seminar. Nairobi, 9–13 March, 1987. IDF/FIL Bull. No. 221.

Reindl, M. and Santander, C. (1978). Diagnosis of dairy production at Paraguay. Special consultation report. Asuncion 1978.

Rodriquez Jr. G. The impacts of the milk pricing policy in Zimbabwe ILCA Bulletin 26: 2–7.

Schneider, H.K. (1984). Livestock in African culture and society: A historical perspective. In: Livestock Dev. in sub-Saharan Africa: Constraints, prospects, policy. Ed. J.R. Simpson and P. Evangelou. Publ. Westview Press; Boulder, Colorado.

Shalo, P.L. and Hansen, K.K. (1973). Maziwa lala-a fermented milk. World. Anim. Rev. 5: 33–37.

Shalo, P.L. (1987). Pastoral method of handling and preserving milk. In: Dairy development in eastern

Africa. Proc. IDF Seminar. Nairobi 9–13 March, 1987. IDF/FIL Bull. No. 221: 110–112.

Velasco, J.O. (1982). The manufacturing of “Dulce de Leche” in Argentina. Candido Tostes Inst. Journal ILCT 37 (220) 31–33.

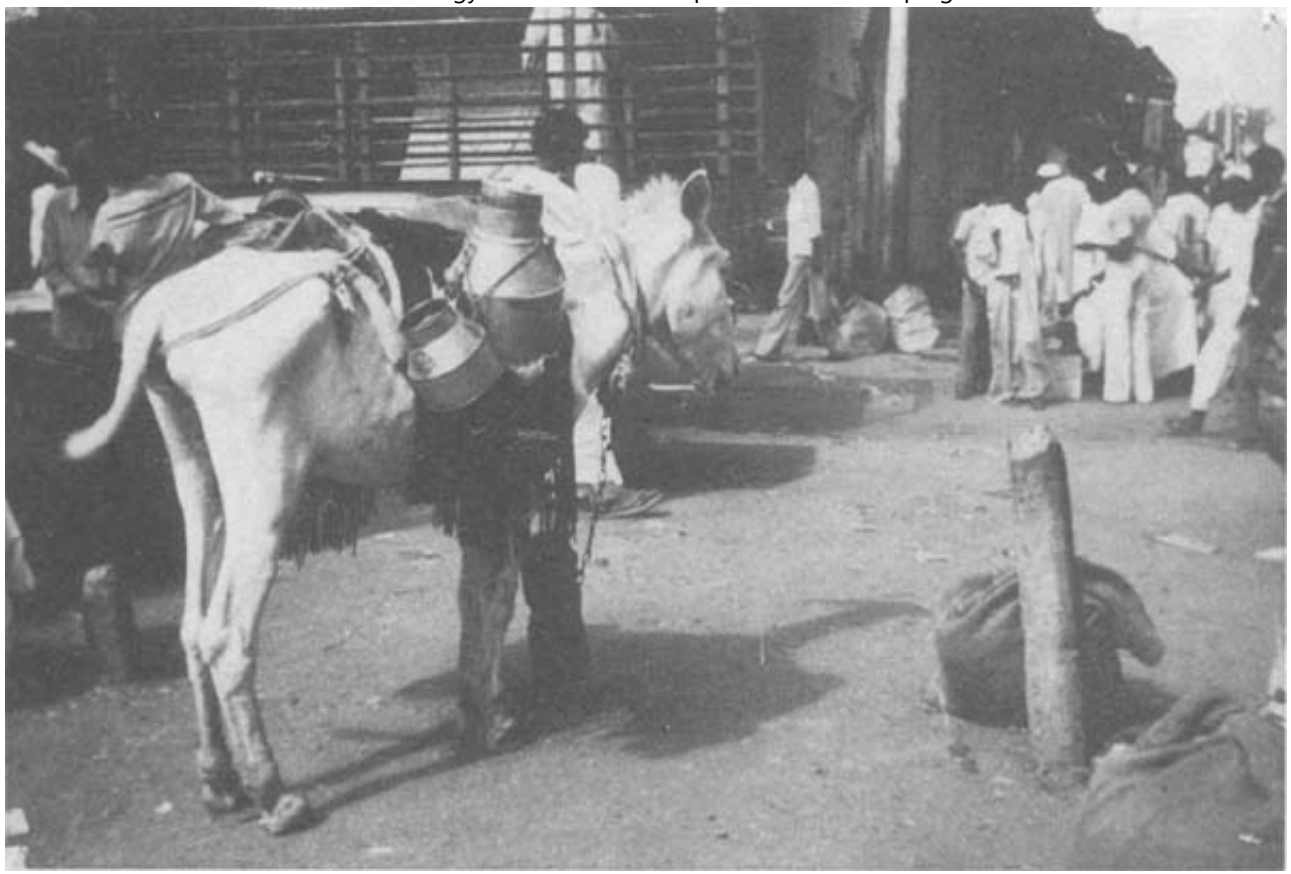
Wagenaar-Brouwer (1986). The contribution of livestock products to diet and nutritional status in two pastoral systems in Mali. ILCA, Addis Ababa.

Webb, B.H., Johnson, A.H. and Alford, J.A. (1974). Fundamentals of Dairy Chemistry, Publ. AVI Publ. Hse. Westport, Connecticut.

Wilson, R.T. and Clarke, S.E. (1976). Studies on the livestock of Southern Darfur, Sudan, Part 2. Production traits in cattle. Anim. Health Prod. 8 (1): 47–58.

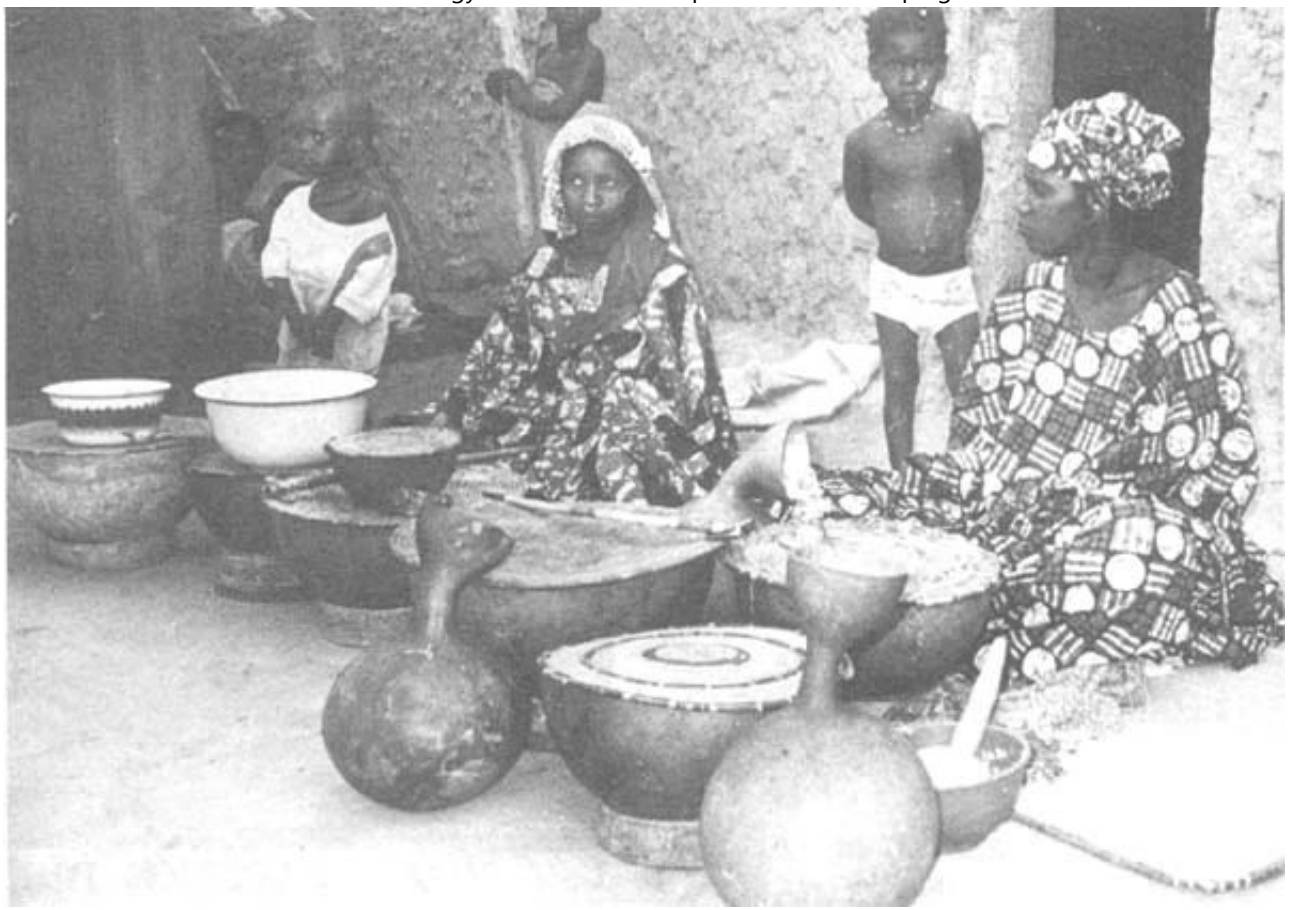
World Bank (1983). World Development Report. Washington, D.C.

1. MILK COLLECTION IN NEPAL



2. MILK COLLECTION IN MOROCCO

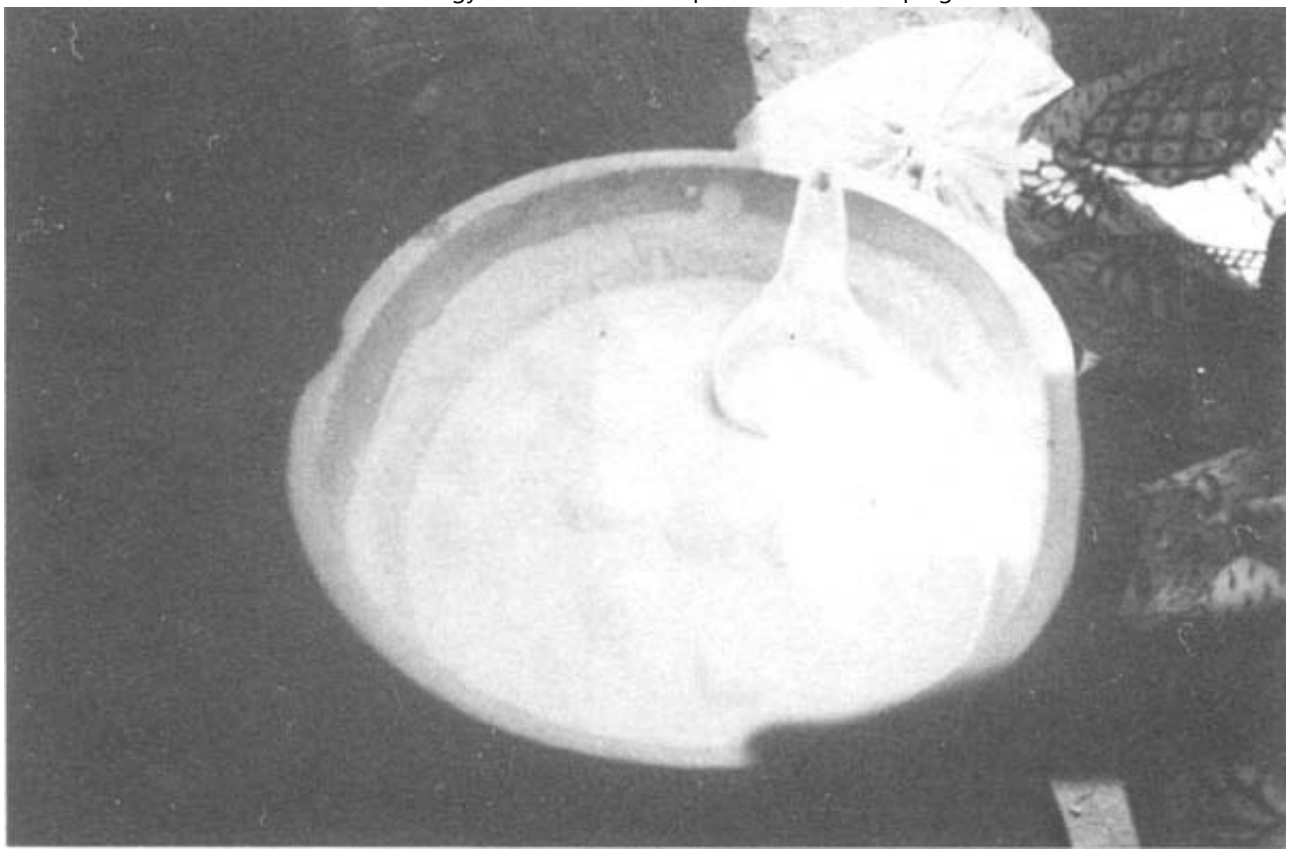
3. MILK COLLECTION ON RIVER BANK IN GUYANA



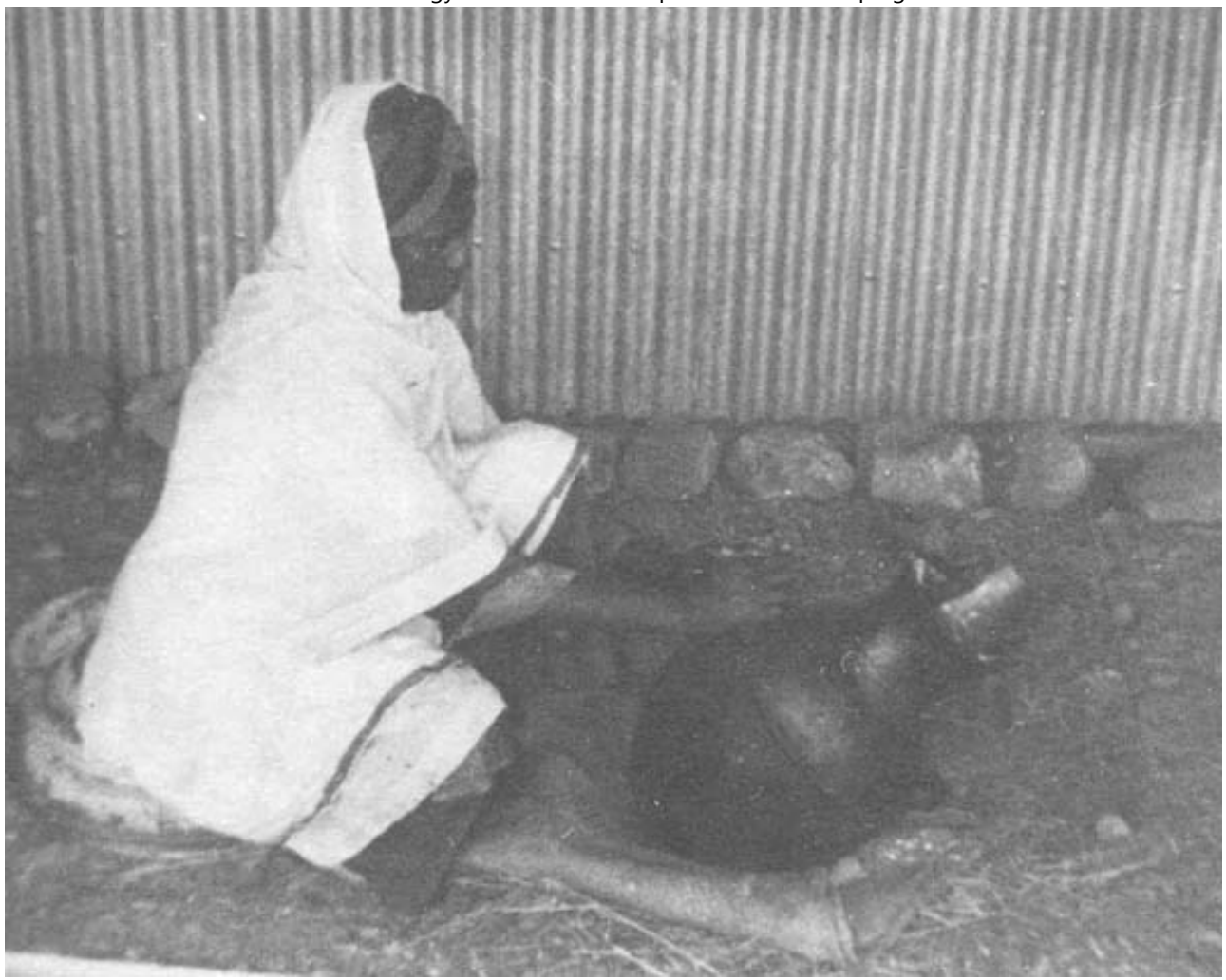
4. SALES OF FERMENTED MILK IN AFRICA

5. CHEESE BEING SOLD AT MARKET IN PERU

6. MARKETING OF FARM CHANCO CHEESE IN CHILE



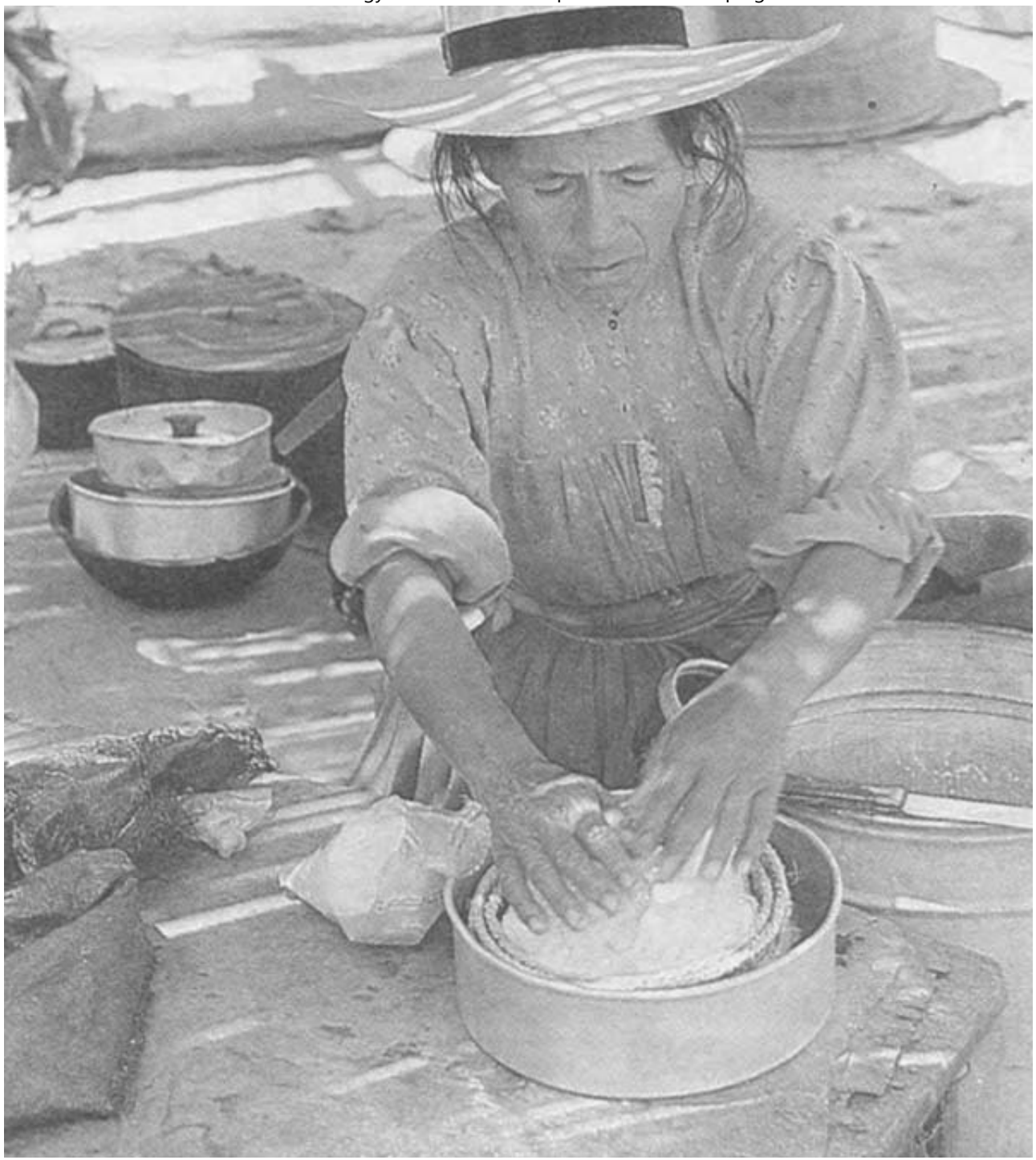
7. SALES OF BUTTER BALLS AND FERMENTED MILK FROM CALABAS IN CAMEROON



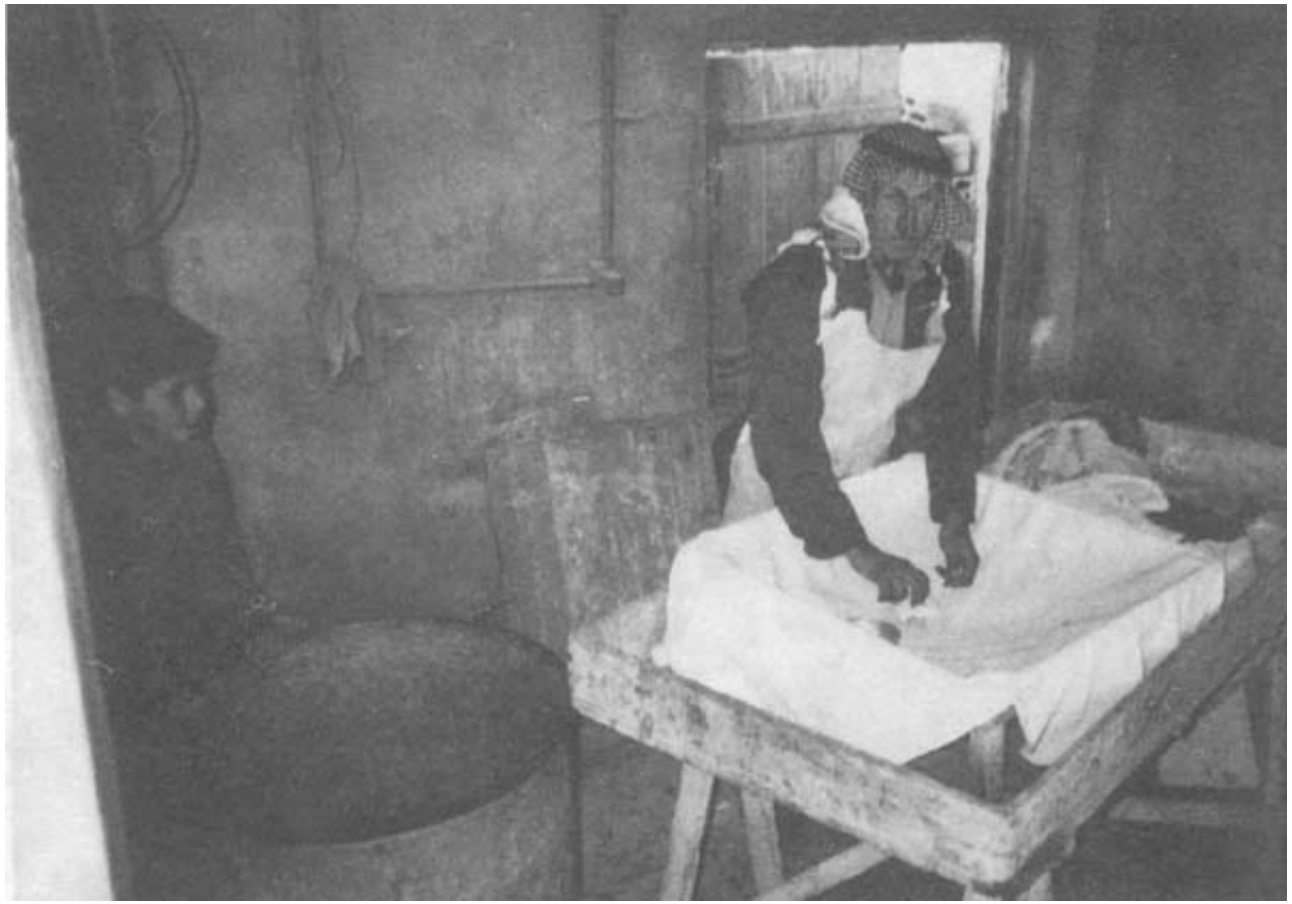
8. TRADITIONAL BUTTERMAKING IN ETHIOPIA USING CALABASSE

9. TRADITIONAL BUTTERMAKING IN EGYPT USING GOAT SKIN

10. EQUIPMENT FOR CHEESMAKING AT FARM LEVEL IN PERU

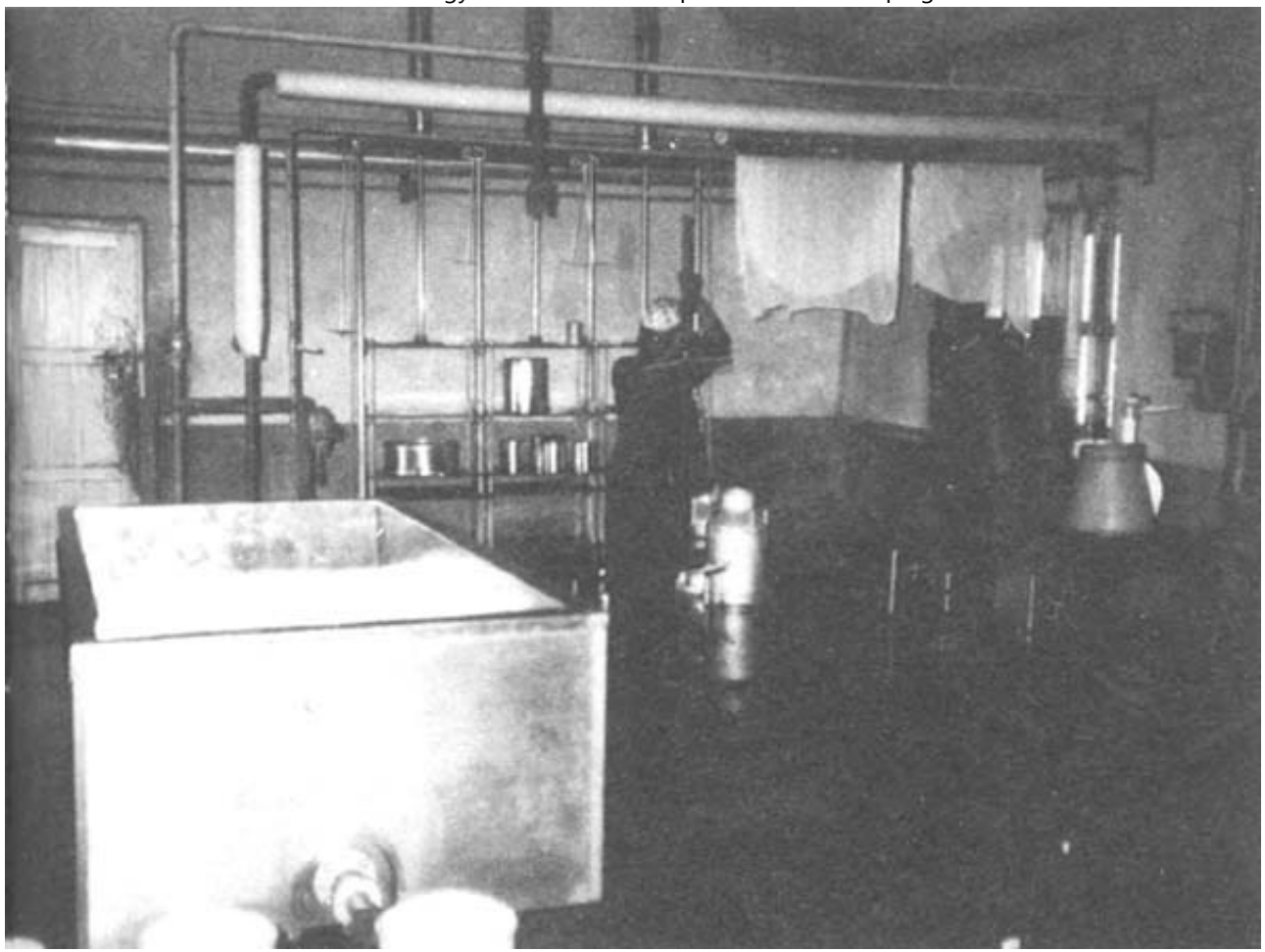


11. MAKING GOAT CHEESE AT FARM LEVEL

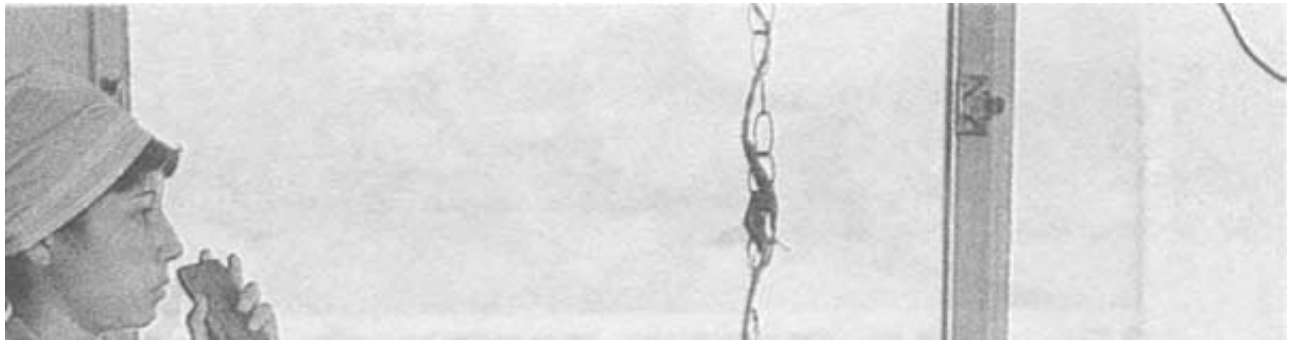


12. CHEESE PRODUCTION BY PRIVATE ENTREPRENEUR IN SYRIA

13. VILLAGE-LEVEL CHEESE MAKING IN PERU

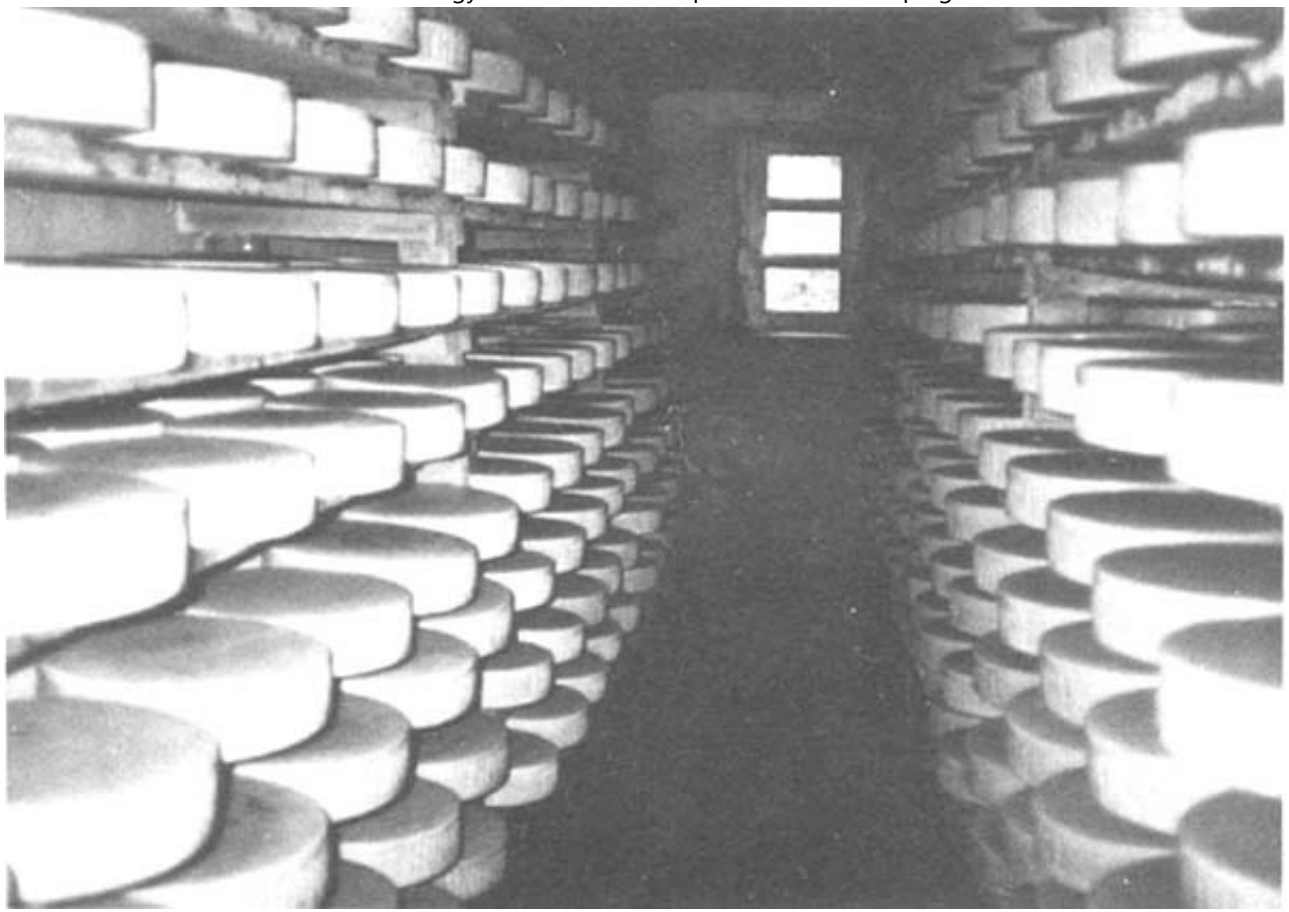


14. SMALL CHEESE FACTORY IN NEPAL USING YAK MILK



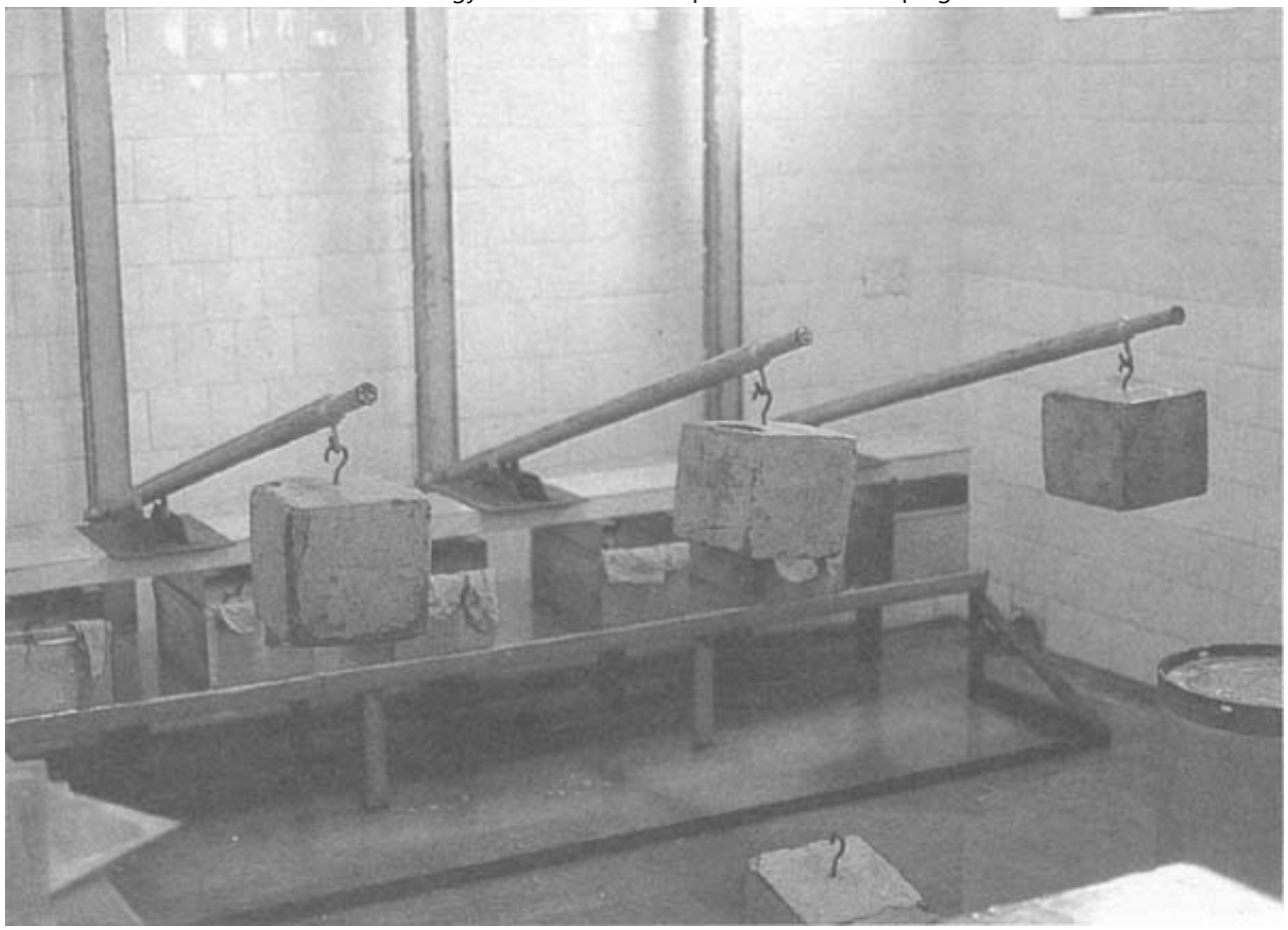
15. SMALL-SCALE PRODUCTION OF SWEETENED CONDENSED MILK IN SRI LANKA

16. CHEESE PRESS FOR YAK CHEESE IN NEPAL



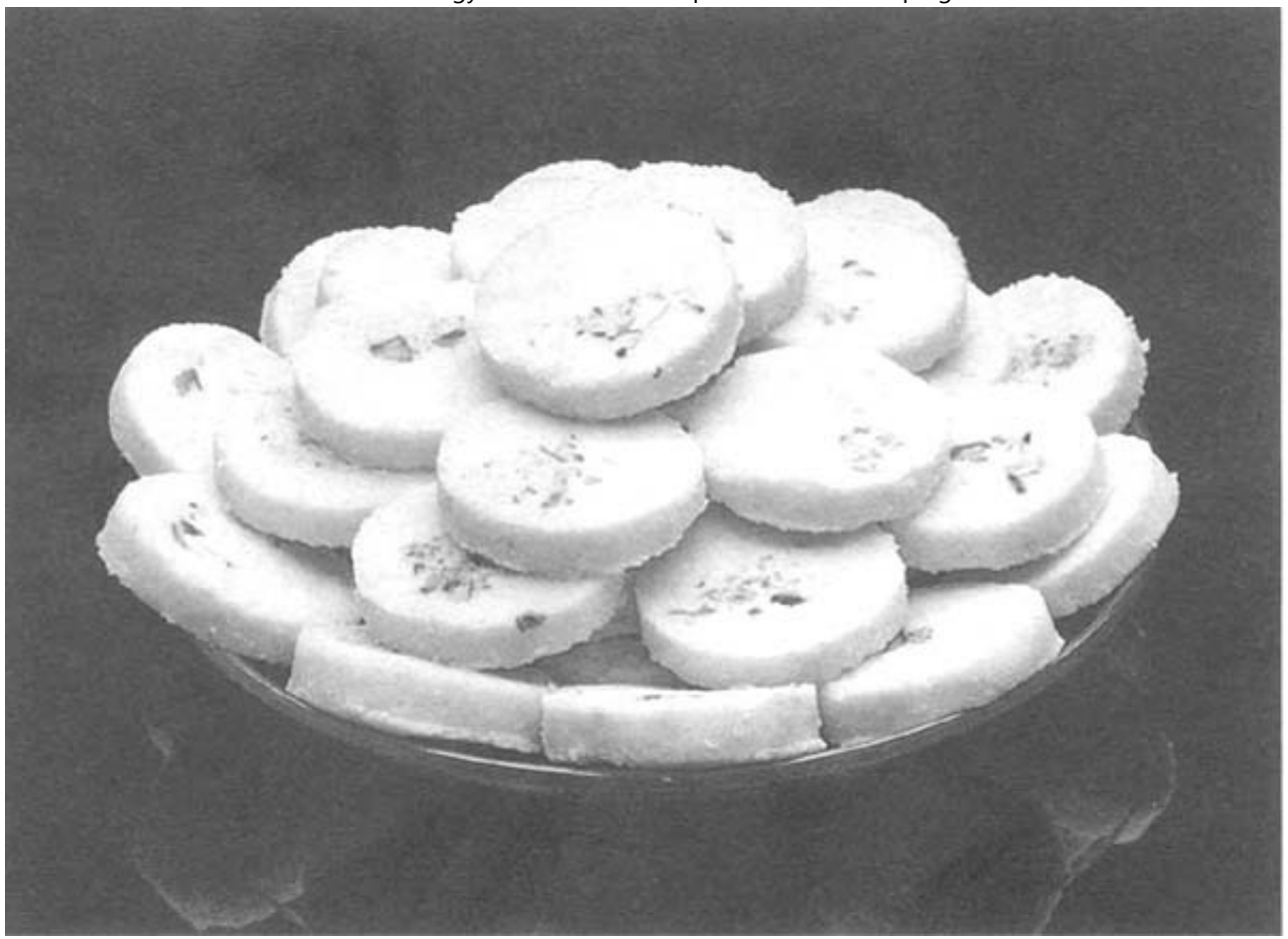
17. YAK CHEESE RIPENING IN NEPAL

18. SUN DRYING TCHOUKOU CHEESE IN NIGER

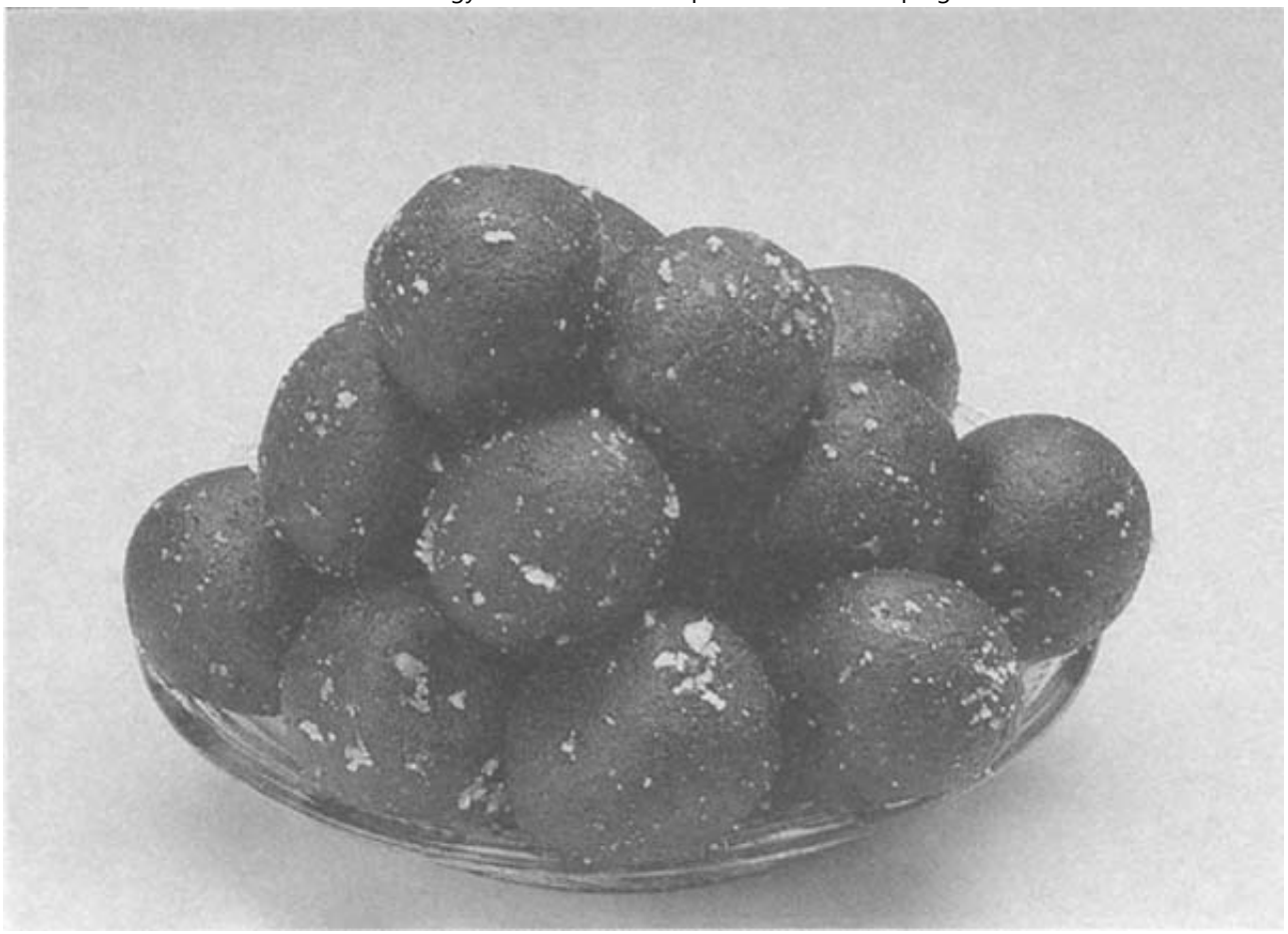


19. CHEESE PRESS FOR FARM CHANCO CHEESE IN CHILE

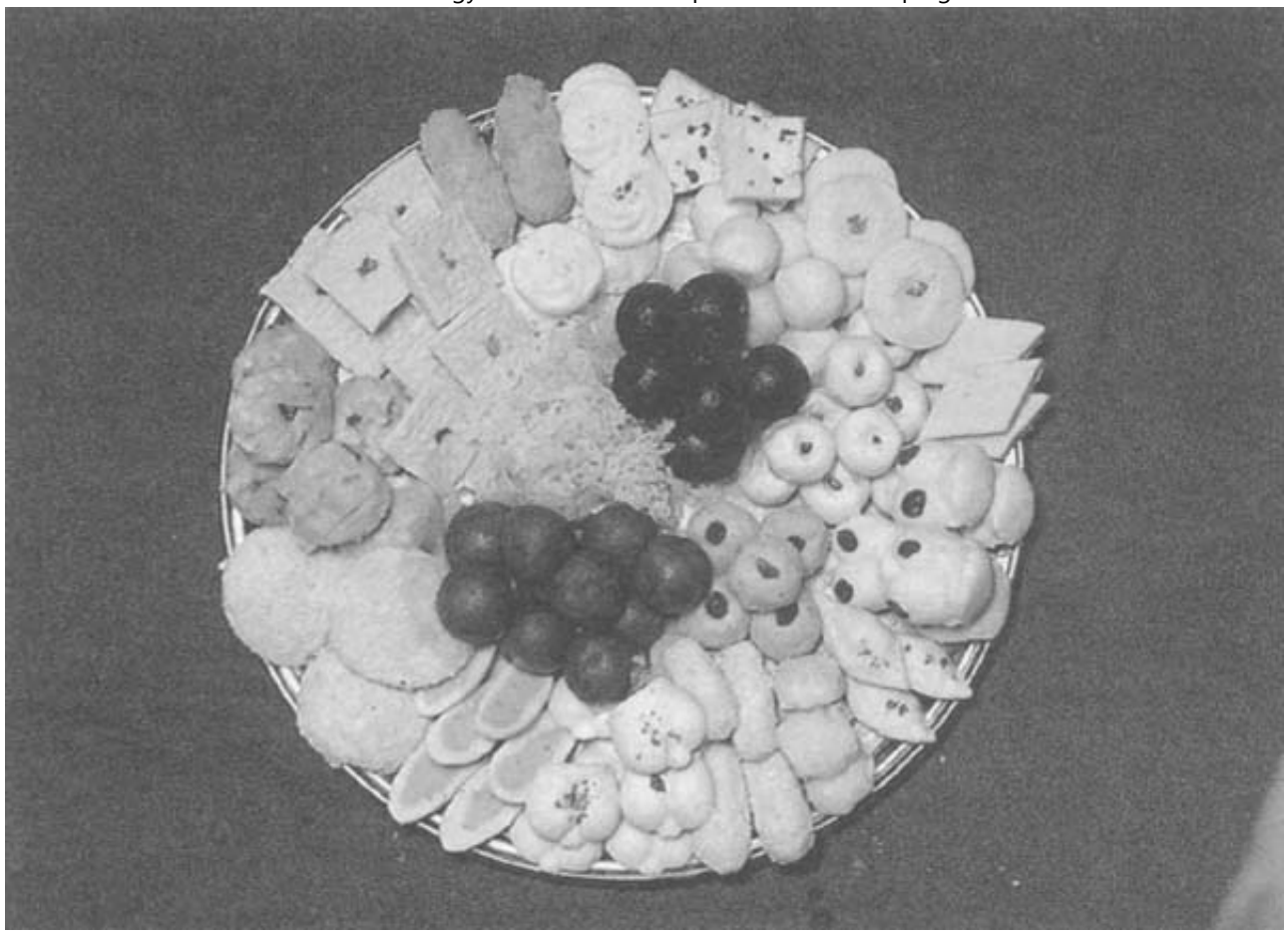
20. GULABJAMUN COMING OUT OF DEEP FRIER AT SUGAM DAIRY



21. MILK-BASED SWEETS IN INDIA



22. MILK-BASED SWEETS IN INDIA



23. BENGAL MILK-BASED SWEETS

24. DRYING CALF STOMACH FOR USE IN COAGULATION OF MILK IN CHEESEMAKING

Part B

CHARACTERISTICS AND MANUFACTURING TECHNIQUES OF TRADITIONAL MILK PRODUCTS

CLASSIFIED INDEX

The products are grouped under four main headings:

- CHEESES
- ACIDIFIED MILKS
- BUTTER AND MILK FAT PRODUCTS
- OTHER MILK PRODUCTS

Each group of products is subdivided into four regions:

- AFRICA
- ASIA
- LATIN AMERICA
- NEAR EAST

The products are presented in alphabetical order within each region:

I. CHEESES

1. AFRICA

1.1 - NAME: **AOULES** **Country: ALGERIA**

- **AREA OF ORIGIN:** Ahaggar region of Southern Algeria
- **AREA OF PRODUCTION:** Same as above
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Goat milk

Type: Aoules may be considered as a dry cheese obtained by heat precipitation of sour buttermilk proteins. It has the shape of a flat cylinder (2 cm thick 6–8 cm diameter)

Consistency: Extremely hard

Composition: Moisture: 8 to 13%

Dry matter: 87–92%

Fat content: 11–20% FDM

- **TECHNOLOGY:** Raw milk is allowed to sour naturally; once coagulated, sour milk is churned; butter is removed and sour buttermilk is poured into a pot on an open fire. It is heated until proteins precipitate. The precipitate is strained in a straw basket and whey is well drained off. Curd is kneaded in small quantity at a time and is given the shape of a flat disk. Then, cheeses are sun dried until complete drying.
- **REMARKS:** AOULES consistency is very hard due to the lack of fat content. This cheese is always ground before consumption, i.e. either being mixed with date paste or with beverage.

1.2 - **NAME:** **AYIB** **Country: ETHIOPIA**

- **AREA OF ORIGIN:** Eastern Africa
- **AREA OF PRODUCTION:** ETHIOPIA
- **ORIGIN AND HISTORY:** Ancestral
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sour milk and butteroil

Type: Curd

Consistency: Crumbly

Composition: Moisture: 79–80%

Dry matter: 21–20%

Fat content: unknown

- **TECHNOLOGY:** Sour milk or butter milk is heated on a low fire to about 40°C, when curd and whey separate, heating is stopped and the content of the pot is allowed to cool down. Subsequently a bunch of straw or vegetable fibre is pushed into the pot and is used as a sieve to drain off the whey. The curd is kept in a clean bowl or pot. The shelf life of the product is limited to not more than a week. Keeping quality is improved by subsequent heat treatment of the curd to 75°C; during heating as much whey as possible is removed.
- **REMARKS:** AYIB is consumed with chicken sauce ("dorowot") which is considered as a national dish, and with "Injera" a flat thin pancake-like bread. It is also mixed with cooked and minced cabbage leaves, fresh and melted butter and chilli powder and is served with minced raw meat (Kitfo).

1.3 - **NAME:** **BRAIDED CHEESE** **Country: SUDAN**

- **AREA OF ORIGIN:** Mediterranean Region
- **AREA OF PRODUCTION:** SUDAN; Eastern and Western provinces
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow, goat or sheep milk. It is made also from reconstituted milk.

Type: Semi-hard, braided cheese with close texture; unripened, the curd is yellowish and has a slightly acid and salty taste.

Consistency: Firm

Composition: Moisture: 40%
Dry matter: 60%
Fat content: unknown.

- **TECHNOLOGY:** Milk is heated to 30–40°C and rennet is added (one tablet for 150–200 Lbs). Coagulation takes about 5 hours. The coagulum is ladled out into a cheese cloth mounted on a wooden frame. Salt (10–15%) and black cumin are added. Curd is heated at a low temperature to develop its elasticity; it is cut in stripes of 5 × 15 cm and braided. The pieces of cheese are salted in brine and subsequently put beside and on top of each other so as to fill the 10–15 kg tins which are filled with brine.

- **REMARKS:** This cheese is very popular and is consumed as staple food by the Sudanese population. It is made at family level or in small cheese plants for sale on local markets.

1.4 - **NAME:** **COUNTRY CHEESE** **Country: NIGERIA**

- **AREA OF ORIGIN:** NIGERIA, the Wase and Wawa/Zange Grazing Reserves.

- **AREA OF PRODUCTION:** Same areas, in the Plateau and Bauchi States.

- **ORIGIN AND HISTORY:** Of recent introduction by the UNDP/FAO project for rural Development in grazing reserves. Its production is developing steadily in the same areas.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole milk from cows

Type: Hard cheese with short ripening. The cheese has a hard rind which is usually smoked and shows small eyeholes; the curd is yellowish and

the taste is slightly acid and salty. Presentation 1 kg square blocks.

Consistency: Hard

Composition: Moisture: 40–42%

Dry matter: 60-58%

Fat content: 45% FDM

- **TECHNOLOGY:** Milk is not subjected to any heat treatment. Coagulation is obtained by means of rennet in powder, in 30 minutes at 32–34°C. The curd is cut in bean-sized pieces and it is vigorously stirred for 20–30 minutes at 32–34°C. At this stage, about 40% of the whey is removed and is replaced by hot water to reach a temperature of 40°C. Stirring is carried on for 20–30 minutes at 40°C. When curd grains are dry enough, the curd is left to settle. Most of the whey is drained out and the block of curd is pre- pressed under a pressure of 10 kg/1 kg of curd for 45 minutes. The curd block is then cut into 1 kg pieces and put into moulds. Cheese is heat-treated by heating it in whey at 80–84°C for 30 minutes. Cheeses are taken out of the moulds once completely cooled and are then dry salted. The day after, cheese is smoked for 2 to 4 hours. Once cooled it is packed in plastic film under vacuum. After it is sealed, it can be kept for several weeks at 4°C.

- **REMARKS:** Production is seasonal, i.e.: the cheese is produced during the peak season.

1.5 - **NAME:** **FROMAGE** **Country: MADAGASCAR**

- **AREA OF ORIGIN:** unknown

- **AREA OF PRODUCTION:** MADAGASCAR, in the Antsirabe, Ambatomena, Ambohimiarivo, Soanin- drariny regions.

- **ORIGIN AND HISTORY:** The technique was introduced by foreigners who during the past decades worked in Antsirabe.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole milk from cows.

Type: Semi-hard, with hard rind.

Consistency: Firm body with salty taste.

Composition: Unknown.

- **TECHNOLOGY:** Temperature of raw milk is adjusted at 30°C. No starters are used and acidificatin develops from natural flora of milk. Coagulation is obtained with imported rennet in powder (one coffee spoon for 40 litres of milk). Coagulation takes one day. Cheese whey is drained-off in perforated plastic moulds; subsequently it is pressed by hand until all the whey is eliminated. The curd is cut then into pieces of 0.5 to 1 kg and salted in brine at ambient tempera- ture (2 kg of salt for 7 litres of water) contained in wooden barrels. The pieces of cheese are taken out and kept on a draining shelf at ambient temperature until it is marketed.
- **REMARKS:** Production is somewhat limited and based on the availability of milk and on the demand, i.e. to supply the hotels in Antananarivo.

1.6 - **NAME:** **FROMAGE BLANC** **Country: MADAGASCAR**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** MADAGASCAR: Antsirabe, Soanindra-Riny regions.
- **ORIGIN AND** Unknown.

HISTORY:

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: This cheese is made from skimmed milk from cows.

Type: Soft fresh unripened cheese with no rind, slightly salty.

Consistency: Soft

Composition: Moisture: 33%

- **TECHNOLOGY:** The milk is boiled for 5 minutes, no starters and no additives are added. When cooled to about 33°C, rennet is added and after one hour or so the coagulum is cut and cheese whey is drained off in a sieve. The curd is put into aluminium moulds and is pressed for 18 hours at a temperature of 30–33°C. In the moulds, cheese is salted alternatively on both sides. It is then taken out and cut in pieces of 100 to 250 grammes and wrapped in cellophane before putting them in cardboard or plastic boxes for further commercialization.

- **REMARKS:** This cheese is sold either directly to consumers or through intermediaries.

1.7 - **NAME** **GIBBNA** **Country: SUDAN**

- **AREA OF ORIGIN:** GIBBNA originated from the nomadic areas in SUDAN.

- **AREA OF PRODUCTION:** This cheese is made in the Ed Dueim region, in Central SUDAN; in the El Obeid region, Western Sudan and in the Eastern part of the country.

- **ORIGIN AND HISTORY:** The origin of GIBBNA is not known exactly; however, it resembles very much the Feta and Domiati cheeses and it is reported that GIBBNA was introduced in Sudan by first Greek and Syrian emigrants and

established itself in the traditional nomadic pastoralist systems.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: GIBBNA is made from whole cow/sheep/ goat milks or from their mixtures.

Type: It is a soft white brine pickled cheesewith a slightly salty and sour taste. The curd is white and the cheese, cut in cubes of 10 × 10 × 10cm or rectangles of 10 × 10 × 20cm, weight 1 or 2 kilos. It has no rind.

Consistency: Soft with a close texture.

Composition: The composition is not known precisely; however, the moisture was said to be in the region of 50 per cent.

- **TECHNOLOGY:** Eight to 10% of salt is added to the milk after it has been subjected to natural acidification. Milk is coagulated with commercial rennet, one tablet disolved in one litre of water for 100 litres of milk. Coagulation lasts for 5 to 6 hours at ambient temperature. The curd is ladled into moulds at which have been lined with a cheese cloth. Cheese in moulds is pressed overnight and subsequently cut into blocks which are transferred to tins filled up with cheese whey to which salt can be added.

- **REMARKS:** GIBBNA is made at family or small cheese unit level. It is a stapple food consumed mainly at breakfast with large beans. Another variety of GIBBNA is known as GIBBNA ROUMI (Greek cheese). Round shaped, it is kept in the same way in tins or on salt bedding. It is said to keep for up to 200 days at room temperature.

1.8 - NAME **MASHANZA** **Country: ZAIRE**

- **AREA OF ORIGIN:** South Africa
- **AREA OF PRODUCTION** **ZAIRE (South Kivu)**
- **ORIGIN AND HISTORY:** It originated in the Kabare area. After a period of decrease, when animal husbandry tended to be replaced by quinquina culture, livestock production is increasing again and the production of this cheese is developing in particular in the Kalaha area.
- **DESCRIPTION AND CHARACTERISTICS:**
- Raw material: Whole cow milk from local cow or from Brown Swiss cattle.
- Type: MASHANZA cheese is a soft fresh cheese without rind. The curd is white, shows big eyes and has a slightly sour taste. This cheese is ball shaped.
- Consistency: Soft
- Composition: Unknown
- **TECHNOLOGY:** Milk is not subjected to any heat treatment. No starter or rennet are added and acidification develops from natural flora of milk. Clotting takes about 5 to 7 days if milk is poured in a milk jug all at once, or only 2 to 3 days if milk jug is filled twice or three times in a day. Then, coagulum is drained in a jute bag. The curd for home consumption is kept in a wooden jug or wrapped in banana leaves for sale. The shelf life of this product is limited to not more than a week.
- **REMARKS:** MASHANZA is consumed alone or with starchy food, such as cooked

sweet potato, banana, cassava or sorghum pastry instead of vegetables or meat. Cheese whey (MAGUNJO) is also consumed as a drink.

1.9 - NAME: **MBOREKI YA IRIA** **Country: KENYA**

- **AREA OF ORIGIN:** Ndunimo area, Laikiapia, WEST KENYA
- **AREA OF PRODUCTION:** Ndunimo area
- **ORIGIN AND HISTORY:** Its origin is not known. This cheese is manufactured by smallholders as a way of utilizing and valorizing milk from their livestock, as fresh milk market is limited in that area.
- **DESCRIPTION AND: CHARACTERISTICS:**

Raw material: Whole cow and/or goat milk

Type: MBOREKI YA IRIA is a soft fresh cheese without rind. The curd has a slightly salty and sour taste

Consistency: Soft

Composition: Unknown

- **TECHNOLOGY:** Manufacturing methods may vary slightly, according to type of milk and the time available for proces- sing. Milk is heated to boiling point and then cooled down to ambiant temperature. Natural fermented milk is added as starter. At the same time, salt is added in a proportion which may vary according to manufac- turers. No rennet or any enzymes are used. After coagulation, the coagulum is put into a cheese cloth and hung up for proper draining overnight.

- **REMARKS:** Fresh MBOREKI YA IRIA is reserved for home consum- ption. It is consumed as a staple food.

1.10 - NAME: MUDAFARA CHEESE Country: SUDAN

- **AREA OF ORIGIN:** Middle East
- **AREA OF PRODUCTION:** SUDAN (all over the country)
- **ORIGIN AND HISTORY:** This cheese has been introduced by the Syrians.
- **DESCRIPTION AND: CHARACTERISTICS:**

Raw material: Whole cow milk

Type: MUDAFARA cheese is an unripened semi-hard cheese without rind. The curd has a slightly salty taste. This cheese is plait shaped.

Consistency: Semi-hard

Composition: Moisture: 40%

Dry matter: 60%

Fat content: 28% FDM

- **TECHNOLOGY:** Milk is heated at 37o – 38oC and rennet in tablets is added. No starters are used, acidification develops from natural flora of milk. After coagulation, curd is heated close to melting point in boiled water to develop its elasticity; it is stretched into long threads which are given a shape of a plait. Then plaits are stored in brine in welded tins at room temperature.
- **REMARKS:** About 7 500 tons of MUDAFARA cheese are manufactured each year. This cheese is sold on local markets.

1.11 - NAME: **PONT BELILE** **Country: CHAD**

- **AREA OF ORIGIN:** Egypt or Sudan
- **AREA OF PRODUCTION:** Ndjamena area/CHAD
- **ORIGIN AND HISTORY:** This cheese was introduced by Egyptian or by Sudanese people.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Goat or sheep milk

Type: PONT BELILE is a fresh cheese without rind. The white curd, unripened, is stretched and has a strongly salty taste. This cheese is given the shape of a plait and its weight is about 400 g. It belongs to the “pasta filata” type.

Consistency: Firm

Composition: Unknown

- **TECHNOLOGY:** Milk is boiled for 2 or 3 minutes. When it is cooled to about 30 to 35°C, rennet is added (tablets are used). No starters are used. Coagulation takes about 20 to 30 min. at room temperature. Then, coagulum is pressed by means of weights. Subsequently, cheese is salted in brine at room temperature and is dipped into boiling water to be stretched and then plaited.
- **REMARKS:** This cheese is consumed in particular by foreigners living in Chad, especially in provinces. This is certainly due to the fact that it keeps for long periods.

1.12 - NAME: **TAKAMMART** **Country: ALGERIA**

- **AREA OF ORIGIN:** Ahaggar region of Southern Algeria
- **AREA OF PRODUCTION:** Same as above
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Mainly goat milk

Type: TAKAMMART is a dry cheese unripened made from whole goat milk. It has the shape of a small flat square and its weight is 15 to 90g. Its colour is dark brown and its surface is scored.

Consistency: Very hard

Composition: Moisture: 7–8%

Dry matter: 92–93%

Fat content: 42–44% FDM

- **TECHNOLOGY:** Raw milk is not subjected to any heat treatment. It is poured into a large wooden jar (Arlal) and a small piece of kid dry abomasum is added to obtain coagulation. After a few hours, coagulum is ladled on an Afezou mat (Panicum turgidum) so as to form small heaps. Every small heap is put on another mat made from wild fennel (Pituranthos scoparius) which gives flavour to cheese. Cheeses are sundried on these mats by direct exposure to the sun for 2 to 3 days. Then, drying is carried on in the shade of trees until the cheese is completely

dessicated. Once dried, cheeses are stored either in goat skins with a wide opening or wrapped in a large skin from antilop or cattle.

- **REMARKS:** TIKAMMARIN is the plural of TAKAMMART in the Turag language. When TIKAMMARIN are one month old, they still can be easily crunched whereas later on, they become so dry that they must be ground before consumption. TIKAMMARIN are either used for consumption or as money equivalent for exchanges.

1.13 - **NAME:** **TCHOUKOU** **Country: NIGER**

- **AREA OF ORIGIN:** Sahelian area (NIGER)
- **AREA OF PRODUCTION:** Sahelian area (NIGER)
- **ORIGIN AND HISTORY:** TCHOUKOU is manufactured by Peulhs and Touaregs
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow, sheep, goat or camel milk.

Type: TCHOUKOU is a hard sun dried cheese without rind. It looks like a thin dry rectangle of 2 mm thick, 30 cm long to 16 cm wide. This cheese has a close texture without eye and has a mild taste. Its colour is milky-white.

Consistency: Firm

Composition: Unknown

- **TECHNOLOGY:** Milk is not subjected to any heat treatment. It is cooled to ambient temperature. Rennet coming from lamb or kid's abomasum dipped in

strained water or industrial rennet is added. After coagulation, coagulum is ladled and strained on straw mats. Meanwhile, curd is slightly pressed to extract most of the whey. This cheese is not salted but dried at ambient temperature. Touaregs preserve it in aerated baskets called AZNAM for 3 to 6 months.

- **REMARKS:** TCHOUKOU is mainly manufactured during rainy season and is preserved for home consumption or to be sold during dry season. People eat it either alone, with millet ball or with tea.

1.14 - NAME: **WAGASHI**

Country: MALI
NIGER
BURKINA FASO
MAURITANIA
TOGO
COTE D'IVOIRE
GHANA
NIGERIA
BENIN

- **AREA OF ORIGIN:** Mali, Niger, Burkina Faso and Mauritania
- **AREA OF PRODUCTION:** MALI, NIGER, BURKINA FASO, MAURITANIA, TOGO, CÔTE D'IVOIRE, GHANA, NIGERIA and BENIN (Western Africa)
- **ORIGIN AND HISTORY:** WAGASHI originated from the Sahelian countries and spread to West Africa. It is very popular amongst nomadic tribes and has been adopted by muslims of may countries.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: WAGASHI is a soft brine pickled cheese without rind. The curd is generally creamy to white with small eyeholes. It has a slightly sour and salty taste. It is sold in pieces of 1/2 to 1 pound.

Consistency: Soft

Composition: Unknown

- **TECHNOLOGY:** Milk is boiled for 3 to 5 minutes. Then, juice from crushed Bryophylum stems (Tootoo Tso in Ghanaian-Ga is added at the rate of 4 stems/litre of milk. No rennet or any starters are used. After coagulation, coagulum is moulded in a clean cheese cloth. Whey is squeezed out by hand pressure to firm balls of different sizes. Cheese balls are salted and subsequently kept in brine with 25% salt. Cheese shelf life is 3 days out of brine and 14 days kept in brine.

- **REMARKS:** It is produced on a rather small scale; however WAGASHI is widely distributed among the muslims and northerners. This cheese is almost always fried before consumption and sometimes before frying is given an orange to light brown colour with dried leaves cut from nodes of millet plant. WAGASHI is used as a protein source in soup and stew. It is marketed by women or herdsmen in local markets.

1.15 - **NAME:** **WAGASSIROU** (Bariba name) **Country: BENIN**

GASSIGUE) (Peulh name)

WOAGACHI)

- **AREA OF ORIGIN:** Northern Benin
- **AREA OF PRODUCTION:** Peulh's encampments, Borgou, Atacora and Northern Zou provinces of BENIN
- **ORIGIN AND HISTORY:** Transhuman Peulhs spread manufacturing process from the Northern Benin camps to centre and southern areas.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Type: Whole cow milk WAGASSIROU is a soft fresh cheesewithout rind. It takes the shape of a curved disk of 10–20 cm diameter and its weight is 200 g to 1.5 kg. The curd is whitish and has a close texture with small eyeholes and a slightly acid and salty taste.

Consistency: Soft

Composition: Unknown

- **TECHNOLOGY:** Milk, cleaned from impurities, is boiled for about 1 h. Meanwhile, for each litre of milk processed, 2 to 8 leaves or a 20 cm long straw of Callotropis Procera are crushed. The collected sap is added before boiling. No rennet or starters are used and coagulation takes about 30 minutes. Subsequently, coagulum is ladled into basket strainers to drain. The curd is neither pressed nor cut. After taking out of the basket, cheese is salted in boiling water, to which a little bit of salt is added, for about 30 minutes. WAGASSIROU is preserved by salting, smoking or drying. Its shelf-life is about 1 month.
- **REMARKS:** WAGASSIROU, consumed as a staple food in northern country, is sold on local markets. Production is very seasonal; it is limited in importance and more expensive during dry season than during the wet season. WAGASSIROU is also called WAGASHI by Peulhs, but WAGASHI's

technology is slightly different from WAGASSIROU's technology presented here (1.14 refers).

1.16 - NAME: **WHITE CHEESE** **Country: SUDAN**

- **AREA OF ORIGIN:** Middle East and Eastern Mediterranean
- **AREA OF PRODUCTION:** All over SUDAN
- **ORIGIN AND HISTORY:** White cheese has been introduced in SUDAN by the Greeks and Syrians.
- **DESCRIPTION AND CHARACTERISTICS:**
- Raw material: Mainly whole cow milk or sometimes mixed with goat or sheep milk
- Type: It is a soft white cheese
- Consistency: Soft
- Composition: Moisture: 49%
  Dry matter: 51%
  Fat content: 22%
- **TECHNOLOGY:** Milk is salted and heated close to 49oC. Rennet in tablets is added when temperature is about 37.5oC. Coagulation takes about 3 to 5 hours. Then, coagulum is ladled into cheese cloth which is placed inside a wooden frame. Corners of the cloth are folded around over the coagulum. Most of the whey drains off until the volume of the curd decreases to 50%. Subsequently cheese is pressed overnight. Then, curd is cut into blocks of 5 to 8 cm and is kept in brine in welded tins for at least three weeks.

- **REMARKS:** White cheese is made for local consumption. The average production is about 33 000 tons a year.

2. ASIA

2.1 - **NAME:** **CHHANNA** **Country:** **BANGLADESH**
INDIA
NEPAL

- **AREA OF ORIGIN:** INDIA
BANGLADESH
- **AREA OF PRODUCTION:** BANGLADESH, INDIA, NEPAL
- **ORIGIN AND HISTORY:** CHHANNA process might derive from Paneer manufacture
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow or buffalo milk

Type: CHHANNA is the solid product formed by the acid-precipitation of milk proteins. It is used as raw material for the preparation of many milk-based sweets. The main difference between CHHANNA and Paneer manufacture is that no pressure is applied to remove the whey in the preparation of CHHANNA. CHHANNA from cow milk has a light yellow colour; it has a moist surface, a soft body and a smooth texture whereas the one from buffalo milk is whitish in colour, with a slightly hard body and a greasy and coarse texture.

Consistency: CHHANNA from cow milk: soft

CHHANNA from buffalo milk: slightly hard

		Cow	Buffalo
Composition	Moisture:	70.0	70.0 % maximum
	Dry Matter:	30.0	30.0 % minimum
	Fat Content:	53.0	61.0 % FDM
	Protein:	37.0	30.0 %
	Lactose:	4.6	4.8 %
	Ash	4.4	4.1 %

- **TECHNOLOGY:** Broadly speaking, CHHANNA is obtained by the precipitation of proteins from the milk by adding acid or sour whey to boiling milk. Subsequently cheese whey is removed. Acidified whey from previous batches of CHHANNA or acid from other sources is added to bring the coagulation about. In order to obtain a desirable body and texture of CHHANNA, the pH of coagulation should be around 5.4, the temperature of the milk at coagulation should be above 80°C and the time in which coagulation is completed should be less than one minute. The coagulum is collected in a muslin cloth which is hung on a peg to ease draining off the whey. No pressure is applied during drainage. Then curd can be used as raw material to prepare Bengali sweets.

- REMARKS: The acids most commonly used are lactic and citric acids. The lactic acid is in the form of chemical acid or of sour whey whereas the citric acid is in the form of chemical acid or of lime juice. Lactic acid tends to produce a granular product whereas citric acid produces a doughy product. Commercial manufacturers generally use sour whey from previous batches for economic reasons and also because the dilution with whey

contributes to give a smooth coagulum which is considered suitable for making Bengali sweets. In small-scale workshops in Nepal, coagulum obtained with lime juice can be pressed more by wrapping the cloth round the lump of curd and pressing it between boards for 1 to 3 hours. However, this manner of manufacturing CHHANNA looks almost like that used for Paneer production. The yield of CHHANNA in INDIA is generally 15 per cent of the cow milk processed whereas it is higher when made from Buffalo milk. About 100 000 tons of CHHANNA are produced annually in INDIA. CHHANNA is also produced in rural milk sheds and transported by road and rail to larger urban conglomerates in wicker baskets which allow further draining of whey. CHHANNA is widely used as a base material to prepare sweets like Sandesh, Channa-Murki, Pantooa, Chumchum, Khitnohan and Rasmalai. The methods of preparation of these products are described in table 20.

2.2	- **NAME**	**CHHUGA, CHHURPI DURUKHOWA**	**Country:**	**NEPAL BHUTAN**
	- **AREA OF ORIGIN:**	Chauri and Yaks rearing areas. High mountainous area and alpine region of NEPAL		
	- **AREA OF PRODUCTION:**	High mountainous region of NEPAL and BHUTAN		
	- **ORIGIN AND HISTORY:**	This product is as SERKAM closely associated with the history of sherpa and other people living in remote mountainous areas and rearing chauris and yaks.		
	- **DESCRIPTION AND CHARACTERISTICS:**			

Raw material: Yak and chauri milk

Type: CHHURPI is the product made from Precipita- ted proteins from buttermilk only or mixed with some partly skimmed or whole milk. Its shape may be rectangular (7–7.5 cm long, 5.5 to 6.5 wide, and 1–3.5 cm thick) or cubic, 1.5 cm side, 3.5–4 cm long). In the first case, its weight is 75 g, otherwise it is about 80-100 g. It may also have a pebble shape (1–2 cm side) and its weight is in this case 5 to 6 g. It has a strong and smoked flavour.

Consistency: Very hard and rubbery

Composition:

Moisture:	8%
Dry matter:	92% (81% protein)
Fat content:	12.5% FDM

- **TECHNOLOGY:** CHHURPI technology includes several stages. The first stages of manufacture are similar to SERKAM technology till curd is strained from the whey (see p. 175) Then, curd is put in wooden moulds and pressed by means of stones. By pressing, most of moisture is expelled from the soft curd. After taking it out of the moulds, the curd cake is cut or broken into small pieces which are threaded on a string and exposed to be sun dried or dried by the heat in front of a fire.

- **REMARKS:** CHHURPI has a longer shelf life and is considered to be of better quality than CHURTSI (smoked cottage cheese) or SERKAM (soft fresh cottage cheese). The hard dried cheese is easy to transport, the demand is greater and it commands a higher market price than smoked or soft cottage cheese type. CHHURPI can be made from whole milk, skimmed milk and/or butter milk. However, production from whole milk is more expensive and the product is softer than CHHURPI made from buttermilk. Buttermilk and skimmed milk are most frequently used. Hard

chhurpies may be ground into powder and used in soup where it gives a smoky cheese flavour as well as a bitter flavour. CHHURPI is called DURUKHOWA or DURUKHO in BHUTAN.

2.3 - **NAME:** **CHURTSI** **Country:** **BHUTAN**

- **AREA OF ORIGIN:** BHUTAN
- **AREA OF PRODUCTION:** BHUTAN (mid-hills and Terai areas)
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Yak and chauri milk

Type: CHURTSI is made from DARTSI which is a soft cottage cheese type identical to SERKAM (i.e. p. 175). CHURTSI is a smoked hard cheese which has an external appearance of a flat large stone packened in a leather bag or a calf skin bag. Its texture is hard and rubbery and it has a smoky and strong flavour.

Consistency: Hard

Composition: Unknown.

- **TECHNOLOGY:** CHURTSI manufacture includes several stages. Raw material for CHURTSI manufacture is called Dhai which is popular like yogurt product obtained by acidification of milk. Then Dhai is churned to make butter. After removing butter, the butter milk called Mahi is drained off and is poured ina large cooking pot. It is gently heated over a fire until milk proteins precipitate to form a mass of curd. At this time the pot is

removed from the fire and the curd is separated from the whey by means of a strainer and squeezed by hand into small balls. Subsequently, fresh cheese balls are put in bulk in a skin bag which is smoked over the fire place in the threshold of the huts.

- **REMARKS:** This product can be kept for several years. This is a delicacy for Bhutanese people and it is considered to be also a medicine for colds and stomach troubles.

2.4 - **NAME:** **KESONG PUTI** (White cheese)

Country: PHILIPPINES

- **AREA OF ORIGIN:** Sta Cruz, Laguna, San Miguel, Bulacan, Cebu and Samar Provinces
- **AREA OF PRODUCTION:** Laguna, Bulacan Cebu and Samar provinces
- **ORIGIN AND HISTORY:** This cheese originated from the Carabao milk production area. Manufacturing methods spread from Sta Cruz, Laguna, San Miguel and Bulacan to the Cebu and Samar provinces, where Carabao milk is also produced.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Swamp buffalo (Carabao) and cow milk

Type: KESONG PUTI is a soft fresh cheese. It has a rectangular of circular shape and its weight is 50 to 100 g. Its body is white and has a slightly sour and salty taste. It has a close texture.

Consistency: Soft

Composition: unknown.

- **TECHNOLOGY:** Two different technologies exist depending whether heat is applied or not and also on the type of coagulation which is used.

1) No heat treatment is applied

If milk is not subjected to any heat treatment, a piece of abomasum and some whey from previous batches are added to it. In this case, coagulation takes 2 to 2.5 hours at room temperature. After coagulation, coagulum is removed from the vat to a container, it is salted, stirred and put into moulds. Moulds are usually made from bamboo or tinned can lined with banana leaves. When this technology is used, cheese weight is 100–120 g.

2) Milk is subjected to heat treatment

Milk is heated to 70–95°C for 10–12 minutes. No starter is used. One litre of vinegar for 10 litres of heated milk is added as coagulant. Coagulation takes 30–40 minutes at 70–90°C. Subsequently, coagulum is moulded and cheese is salted in brine once the curd is firm enough to be taken out of the mould. The weight of each piece of cheese is 25–30 g each and it is wrapped in banana leaves.

- **REMARKS:** The shelf life of this cheese is 4–5 days at room temperature and up to 2 weeks in refrigerator. KESONG PUTI is usually consumed in sandwich or instead of meat for breakfast. Its manufacture is not subjected to any general regulation. KESONG PUTI is also called QUESIYO in Visayas Provinces.

2.5 - **NAME:** **KIMISH PANIER** **Country:** **AFGHANISTAN**
PANEER **INDIA**

- **AREA OF ORIGIN:** Unknown

- **AREA OF PRODUCTION:** All of AFGHANISTAN

North west frontier regions of INDIA

BALOUCHISTAN

- **ORIGIN AND HISTORY:** PANEER is the Hindu name of the seeds of Whitania Coagulans, a vegetable rennet that produces a bitter curd. In past times, ancient Indians already produced curdled milk products obtained by admixture of pieces of creeper called Putika or pieces of bark of Palasa tree or Kuyala (Jujuke) to the milk. However, the curdled milk product, PANEER, appears to have been introduced in the subcontinent from the Middle East. One of the unique Iranian nomadic cheeses is called PANEER KHIKI. It was originally developed by the well-known Baktiari tribe that used to stay in Isfahan (in summer) and in Shiraz (in winter). When salted, this cheese is known as PANEER-E-SHOUR. The word PANEER means container and KHIKI means skin. Rennet from goat or sheep was used for its production. It may be assumed that PANEER was introduced in INDIA by Persian and Afghan invaders. It is perhaps for this reason that PANEER making practice is confined to the North-west frontier regions of the sub-continent. It is only in the past four decades that PANEER consumption has spread to other parts of INDIA.

- **DECRIPTION AND CHARACTERISTICS:**

Raw material: Buffalo, cow, goat, sheep milk or their mixture.

Type: PANEER is a semi hard unripened cheese mainly obtained by acid

coagulation. It has a soft and thin rind. Its body is homogeneous without eyeholes and it has a mild and fresh taste. Its colour is white when it is made mainly from buffalo milk and yellowish in othe cases.

Consistency: Semi hard

Composition:

Afghanistan:	Unknown	
India:	Made from	
	cow milk	buffalo milk
Moisture:	52–54 %	50–52% 70% max.
Dry matter:	46–48%	48–50%
Fat content:	52–54% FDM	58–60% 50% min.

- **TECHNOLOGY:** Different technologies exist depending on the size of the production unit and on the country of production.

INDIA Traditional Technology First, milk is heated to boiling point. Coagulation is obtained by adding th required amount of acid coagulant to the milk which is kept under stirring. The coagulant must be added in a thin jet in not more than a minute. When the whey is clear, it is drained off by hanging the curd in a cloth and later by pressing the PANEER slightly. When produced on a commercial scale, PANEER is pressed into blocks in hoops. A pressure of 2–3 kg per sq cm is applied for 15–20 min. Thereafter, PANEER is removed, cut into pieces of suitable sizes and dipped in chilled water for 3–4 hours to increase its firmness. PANEER is usually not packed and is sold after cutting.

INDIA Industrial Technology

Industrial scale process was developed by the NDDB (National Dairy Development Board). An industrial process for the manufacture of PANEER has been developed by the NDDB and is used by the dairies

in the organized sector. The milk is heated to 85°C through a plate heat exchanger to obtain a coprecipitate, then it is pumped to a cheese vat and cooled down to 75°C. Hot milk is coagulated by adding a solution of citric acid with proper mixing. The curd is left to settle for 10 to 15 minutes muslin cloth and pressed for 10 to 15 minutes at a pressure of 3 kg/sq cm to remove the whey. They final blocks are dipped in pasteurized cold water at 4°C for 3 hours for cooling and making the PANEER firmer. PANEER is cut in 200–500 g blocks wrapped in vegetable parchment paper and put into low density polyethylene/high density polyethylene bags which are sealed. The yield of PANEER depends upon the quality of milk. It is generally 18 to 20% of the milk used for its preparation.

AFGHANISTAN

Soured milk is added to milk at the rate of one-fourth of the amount processed. Curd is moulded in a wooden frame lined with a cheese cloth and it is pressed for 2–3 hours under a pressure of 1–2 kg per kg of curd. Subsequently, after taking it out of the mould, the cheese cake is cut in round pieces with a weight of 1–2 kg.

2.6	- **NAME:**	**PANIR Soft cheese**	**Country:**	**PAKISTAN**
	- **AREA OF ORIGIN:**	Balouchistan and Provinces	North Western	Frontier
	- **AREA OF PRODUCTION:**	Balouchistan and Provinces.	North Western	Frontier
	- **ORIGIN AND HISTORY:**	This cheese is mainly produced in remote mountainous areas of Balouchistan and NWFP where transport of fresh milk is difficult.		
	-**DESCRIPTION AND**			

CHARACTERISTICS:

Raw material:	Buffalo, cow, sheep and goat milk	
Type:	PANIR is a soft cheese. Its body is white when buffalo milk is used and yellowish in other cases.	
Consistency:	Soft	
Composition:	Moisture:	71%
	Dry matter:	29%
	Fat content:	47% FDM

- **TECHNOLOGY:** Milk is heated to 78°C for a short time and then is cooled down to 35°C. A culture of lactic acid producing bacteria is added as starter at the rate of 0.05% of milk weight processed. Then lukewarm brine is added at the rate of 10% of milk weight processed. Coagulation is obtained by adding calf rennet 60 minutes after the beginning of milk maturation. Milk temperature is maintained at 35–37°C during all this stage. After coagulation, the coagulum is drained in cheese cloth without pressing. Cheese is salted after taking it out of the cloth. Its shelf life is 1–2 days.

2.7 - **NAME:** **PESHAWARI cheese** **Country:** **PAKISTAN**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** North Western Frontier Provinces of Pakistan
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND**

CHARACTERISTICS:

Raw material:	Whole or partly skimmed cow milk.	
Type:	PESHAWARI cheese is a semi hard cheese with a soft rind. Its body has a mild to slightly salty taste.	
Consistency:	Semi-hard	
Composition:	Moisture:	45%
	Dry matter:	55%
	Fat content:	45% FDM

- **TECHNOLOGY:** Milk is heated to 63°C for 30 minutes and then is cooled down to 32°C. A culture of lactobacillus in the form of Lassi, which is the traditional yogurt dahi mixed with cold water, is added at the rate of 5–6% of the quantity of milk processed. Coagulation, obtained with 1 ml rennet diluted with 1/2 gallon of water per 500 kg of milk, takes 1 hour at 32°C. After coagulation, the coagulum is cut in small slices and put in a cheese cloth to drain.
- **REMARKS:** This cheese is sold on local markets.

2.8 - **NAME:** **PONIR** (Austragram cheese)

		Country:	**BANGLADESH**
- **AREA OF ORIGIN:**	Austragram, (BANGLADESH)	Kishoreganj	district
- **AREA OF PRODUCTION:**	North eastern part of BANGLADESH		

- **ORIGIN AND HISTORY:** Its origin is unknown. In the early nineteenth century, PONIR was produced at farm house level; at present this product is mainly

manufactured by small-scale dairies.

-**DESCRIPTION AND CHARACTERISTICS:**

Raw material:	Cow or buffalo milk	
Type:	PONIR is a semi-hard ripened cheese. Its body is white and shows gas holes. Its texture is waxy and it has a slightly salty to salty taste. PONIR has a round shape and its weight is 1–2 kg.	
Consistency:	Semi-hard	
Composition:	Moisture:	40–50%
	Dry matter:	50–60%
	Fat content:	40–50%

- **TECHNOLOGY:** Milk is heated to 65–70°C for 30 minutes; 0.5–1 litre of mesophilic culture (Lactobacillus and Strepto- coccus) is added per 100 litre of milk as starter. Coagulation, obtained with 20–30 ml of liquid rennet per 100 litres, takes 1 hour. After coagulation, the coagulum is ladled in layers in a bamboo frame lined with a cheese cloth. Then, curd is pressed for 2 hours under a pressure of 2 kg of curd. After taking it out of the cloth, the cheese cake is cut in 10 to 12 cm side cubes and dipped in chilled water to firm the curd. Subsequently, salt is spread on the curd pieces at room temperature. Cheese is kept in bamboo made pots covered with a polyethylene film. It is ripened for 4 to 6 weeks at room temperature and can be stored for 6 months.

- **REMARKS:** This product is not subject to any general regulation.

2.9 - **NAME:** **SERKAM, SHER, SHERGUM**, **DARTSI**

Country: **NEPAL**

BHUTAN

- **AREA OF ORIGIN:** High alpine region of NEPAL
- **AREA OF PRODUCTION:** High mountainous area and alpine regions of NEPAL and BHUTAN
- **ORIGIN AND HISTORY:** The history of this product is closely associated with the history of sherpa and other people living in remote high mountainous and alpine regions of NEPAL where livelihood, occupation, tradition and culture revolve around the nomadic rearing of Chauri (crossbreeding between Yak and Bos Taurus) and Yak animals.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Yak and Chauri milk

Type: SERKAM is a product made from precipitated proteins from buttermilk heated up to boiling point. The separated curd is either freshly used as such or sundried and ground in powder to be stored. Fresh SERKAM has a mild and slightly acid taste. SERKAM in powder is light green coloured.

Consistency: Fresh: soft

Dry: powder

Composition: Unknown

- **TECHNOLOGY:** SERKAM manufacture includes several stages. Sho or Dhai (Dahi in India) is a popular yoghurt like product used as raw material for SERKAM production. To obtain Sho, milk is first of all boiled, cooled to body temperature, inoculated with 1–2% starter which usually is Dhai or buttermilk from the previous day. Milk is then allowed to set overnight. Subsequently, Sho is churned to prepare butter by traditional method. Some lukewarm water is usually added to Sho before churning in order

to speed up fat separation. As a matter of fact churning can take 2–5 hours in particular in the morning during cold season. After removing butter (called NAUNI GHIU in Nepal) the buttermilk (called MAHI) is poured into a large cooking pot and gently warmed over a fire. The milk proteins rapidly precipitate to form a curd. Buttermilk is boiled until protein flakes take a yellow greenish colour. Then, the pot is removed from the fire and curd is strained from the whey. It is squeezed by hand into small spheres of different size and weight (BHUTAN) or in the form of grains (NEPAL). This fresh cheese also called “SHER or SHERGUM” can keep for up to two weeks in colder parts of the country. These soft cheeses are packed in bamboo baskets, after wrapping with banana or tree leaves. However, as in the Alpine regions of NEPAL, the short shelf life of SHER poses a marketing problem, herders have developed methods of further processing the soft cheese into a dried powder cheese with a prolonged shelf life. This product is obtained by pressing SERKAM between the palms of hands, screening it and spreading over a mat to facilitate sundrying.

- **REMARKS:** SERKAM is consumed as a staple food by people living in this region. This powder is mixed with flour, butter and sugar to prepare a typical dish called “Satoo”.

2.10 - **NAME:** **SHOSIM** **Country:** **NEPAL**

- **AREA OF ORIGIN:** Khumbhu region, Somar, Ramechap, Dolakha-Sosim

- **AREA OF PRODUCTION:** High mountainous alpine region

- **ORIGIN AND HISTORY:** The history of this product is closely associated with the history of sherpa and country people living in remote high mountainous and alpine

regions of NEPAL whose livelihood, occupation, traditions and culture revolve around the rearing of Chauri and Yak animals.

-**DESCRIPTION AND CHARACTERISTICS:**

Raw material: Yak and Chauri milk

Type: SHOSIM is a soft cheese overipe without rind. It has a very soft, greenish body with a close texture. It has a sharp and slightly acid taste when it is consumed after few weeks of fermentation only.

Consistency: Very soft

Composition: Unknown.

- **TECHNOLOGY:** Milk is first processed in SERKAM (see p. 175) which is a fresh soft cheese obtained by heat precipitation of milk proteins. Then, SERKAM is put in a wooden or earthen vessel, previously used without being washed, and left to ripen under anaerobic conditions for at least 2 to 8 months. The surface of the vessel which must be air tight is lined with an undetermined bacterial population. SHOSIM is consumed in the form of “soup” or mixed with pickle to get CHATANI. Broadly speaking, the flavour of this product improves and becomes less sharp when SHOSIM is kept for a long time. SHOSIM is also called SOGAR.

2.11 - **NAME:** **TAHU SUSU ATAU DADIH**

Country: INDONESIA

- **AREA OF ORIGIN:** Northern Sumatra

- **AREA OF PRODUCTION:** INDONESIA

- **ORIGIN AND HISTORY:** Unknown

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow and buffalo milk

Type: TAHU SUSU ATAU DADIH is a soft fresh cheese. It is obtained by coagulating the milk with vegetable rennet; its shape can be round or cubic and its weight usually 1 lb depends on the cheesemaker. Its body is white with a rough texture. It shows large eyeholes and has a soft rind. It has a slightly acid and fresh taste.

Consistency: Soft

Composition: Unknown.

- **TECHNOLOGY:** Milk is heated to 75° for 15 minutes. No starters are used. Coagulation is exclusively obtained from a vegetable enzyme: Bromelin extracted from pineapple; it takes 15 to 30 minutes at 30–40°C. After coagulation, coagulum is broken by stirring and curd is put in a cheese cloth to drain off whey by squeezing. Then, the pressed curd is cooked and pressed again by hand for several minutes. Cheese is salted in brine at room temperature.

3. LATIN AMERICA

3.1 - **NAME**: **ALTIPLANO Country: BOLIVIA**

- **AREA OF ORIGIN:** Altiplano, BOLIVIA
- **AREA OF** All over the Altiplano area including inter

PRODUCTION:

Andean valleys in Bolivia

- **ORIGIN AND HISTORY:** This cheese was already manufactured in Incas time on the Altiplano. Since that time, manufacture spread to valleys where it is now mainly produced with almost exactly the same technology.

DESCRIPTION AND CHARACTERISTICS:

Raw material: Whole cow and sheep milk.

Type: ALTIPLANO is a soft fresh cheese with a soft rind. It has a close texture and a salty taste. It has a cylindrical shape and its weight is from 200 g to 1 kg.

Consistency: Soft

Composition: unknown.

- **TECHNOLOGY:** Milk is not subjected to any heat treatment. Coagulation, obtained with calf rennet (one fourth of the calf abomasum per 50 litres) takes 2 hours at 6 to 12°C. Salt is added directly before moulding. Curd is ladled into straw moulds and pressed for 3 hours under a pressure of 2.5 pounds/kg. The cheese is not packed, it is kept at room temperature (6 to 12°C) in mineral salt.
- **REMARKS:** ALTIPLANO cheese is sold directly from producers to consumers.

3.2 - **NAME:** **CHIHUAHUA Country: MEXICO**

- **AREA OF ORIGIN:** Chihuahua (MEXICO)
- **AREA OF PRODUCTION:** **MEXICO**
- **ORIGIN AND** It was introduced by mennonite settlers in CHIHUAHUA area. Its technology

HISTORY: and characteristics are very similar to chester.

- **DESCRIPTION AND CHARACTERISTICS:** Raw material

Raw material: Whole cow milk

Type: CHIHUAHUA is a semi-hard ripened cheese with a soft rind. Its body is coloured and shows a few mechanical eyeholes. it has a slightly acid taste.

Consistency: Semi-hard, fusible

Composition: Moisture: 39 to 40%

Dry matter: 60 to 61%

Fat content: 50 to 51% FDM.

- **TECHNOLOGY:** Milk is heated to 65°C for 30 minutes. Then, lactic acid producing bacteria are added at the rate of 2% as starters. At the same time, 0.02% of calcium chloride and 0.10% of vegetable dye (Achiote) are added. Coagulation, obtained with rennet, takes 30 to 40 minutes at 35°C. Subsequently, coagulum is cut into pieces of 5 x 5 cm. salted and moulded. Cheese is pressed by means of a mechanic or hydrolic press. It is packed into plastic bags and ripened for 30 days at 4 to 6°C. Its shelflife is about 30 days.

- **REMARKS:** Its manufacture is subject to the general health regulations.

3.3 - **NAME:** **COLONIA Country: URUGUAY**

- **AREA OF ORIGIN:** Colonia area and Southern URUGUAY

- **AREA OF PRODUCTION:** Colonia area and Southern URUGUAY

ORIGIN AND HISTORY: Unknown

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: COLONIA is a semi-hard ripened cheese with rind. Its body shows 6 to 15 mm diameter round holes and has a mild taste. Its shape is cylindrical (30 cm ø)

Consistency: Semi-hard

Composition: Moisture: 38%

Dry matter: 62%

Fat content: 40% FDM.

- **TECHNOLOGY:** The milk standardized to 2.8% percent of fat is heated to 72°C for 15 min. Starters are added at the rate of 0.05 to 1.25%. Calcium chloride may be added also at the rate of 20 g/100 kg. Coagulation, obtained by calf rennet in powder takes about 20 to 25 min. at 32°C. then, coagulum is cut into 6 mm side cubes and heated to 48°C in 20 minutes for 30 minutes. Subsequently, curd is prepressed and moulded into round moulds (20 cm high, 30 cm diameter). Curd is pressed for 3 hours with 4 turning over. After each turning over, pressure is increased until it reaches 3.5 kg/cm2. Cheese is salted in brine at 12°C for 3 days and then ripened in a ripening room (24–26°C 85% humidity) for 20 to 25 days.

- **REMARKS:** COLONIA is sold in URUGUAY on the domestic market and is exported. About 1,750 tons of COLONIA are produced per year.

3.4 - **NAME:** **COTIJA cheese Country: MEXICO**

- **AREA OF ORIGIN:** Cotija, Mishoacan
- **AREA OF PRODUCTION:** Centre and southern areas of MEXICO.
- **MEXICO AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk and/or goat milk.

Type: COTIJA cheese is a hard ripened cheese with a hard rind. Its body contains some small eyeholes and has a salty taste. It has a cylindrical shape and its weight ranges from 11 to 30 kg.

Consistency: Hard and close texture

Composition: Moisture:38%

Dry matter: 62%

Fat content: 45% FDM

- **TECHNOLOGY:** Milk may be boiled at 93°C or heated to 65° to 68°C for 30 min. Once it is cooled down to 35°C, lactic acid producing bacterial culture is added at the rate of 2%. At the same time, 0.02% of anhydrous calcium chloride and 0.1% of natural dye (Achiote) are added. Coagulation, obtained by rennet, takes about 30 to 40 minutes at 35°C. Subsequently curd is cut to the size of rice grains and is left to settle. Why is drained off by gravity. Salt is added directly to the curd at room temperature. Curd is moulded and pressed mechanically. Cheese is ripened during 100 to 365 days in a cool and dry room.

- **REMARKS:** Its manufacture is subject to the general health regulations.

3.5 - **NAME:** **DE MANO Country: VENEZUELA**

- **AREA OF ORIGIN:** VENEZUELA
- **AREA OF PRODUCTION:** VENEZUELA
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: DE MANO cheese is a semi-hard unripened cheese without rind. The curd has an homogeneous texture with no eyeholes and has a smooth and slightly salty taste.

Consistency: Semi-hard

Composition: Moisture: 45–50%

Dry matter: 50–55%

Fat content: 45% FDM.

- **TECHNOLOGY:** Milk is heated to 39°C. No starters are used. Coagulation, obtained by rennet, takes about 15 to 16 hours at room temperature. Then, coagulum is heated to 80°C in salted water, stretched and kneaded to give it elasticity. Subsequently, curd is given the shape of small disks (15 cm ø) by hand.
- **REMARKS:** DE MANO is sold directly by smallholders as well as to middlemen. Its manufacture is controlled by the Welfare and Health Ministry.

3.6 - **NAME:** **FARM CHANCO Country: CHILE**

- **AREA OF ORIGIN:** Southern CHILE

- **AREA OF PRODUCTION:** From Region V (Valparaiso) to Region X (Valdivia - Puerto Mont)

- **ORIGIN AND HISTORY:** Probably the name “CHANCO” comes from a city located in region VII. FARM CHANCO is the main typical chilean cheese made in small- and medium-sized dairies in a traditional way until 1950. Since then, it is produced in industrial dairies as well but with improved methods, and under good sanitary conditions; this resulted in obtaining very standardized products.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: FARM CHANCO is a semi-hard ripened cheese with reduced lactose content. The soft and yellowish body contains irregular small eyeholes and has a slightly salty and sour taste. This cheese has usually a rectangular shape (30 x 25 x 12 cm) and its weight is 8 to 10 kg.

Consistency: Soft

Composition: Moisture: 45 to 47%

Dry matter: 53 to 55%

Fat content: 49 to 51% FDM.

- **TECHNOLOGY:** There are mainly two ways of making CHANCO cheese, i.e.: the traditional and the industrial techniques. Traditional technology FARM CHANCO is traditionally made with raw milk heated only to 30–32°C. No starters are used and acidification develops from natural flora of milk. coagulation, obtained by rennet powder (2 to 3 g powder/100 litres) or in some cases by microbial rennet, takes

up to 60 minutes at a uncontrolled temperature.
In some remote dairies (e.g. Palena, XI Region), small pieces of calf abomasum or some times rennet solution made by soaking of calf abomasum in whey are used as coagulating agent. After coagulation, coagulum is cut in pieces of 1 cm3 and is left to settle for 10 minutes. Then, it is stirred gently for 15 minutes. About 30% of cheese whey is drained off and curd is heated to 36°C by adding hot water (50 to 60°C). Subsequently, cheese whey is completely drained off.

Curd is salted by addition of salt solution directly in the vat and is moulded in cheese cloth placed in wooden moulds. Then, cheese is slightly pressed overnight.

Traditional FARM CHANCO is ripened for 10 to 30 days at room temperature. Ripening parameters are not controlled. Normally, moulds develop on cheese surface which is cleaned up when cheeses are sent for sale.

Industrial technology

It differs from traditional technology mainly by heat treatment. In this case, milk is heated to 75°C for 15 seconds or to 63.65°C for 20 to 30 minutes. Once it is cooled down to 30–32°C, a lactic starter made of a blend of mesophylic bacteria is added at the rate of 0.5 to 1%. In the same way, calcium chloride and nitrate are added at the rate of 20 g/100 l milk each. Coagulation, obtained by rennet powder (2.5 to 3 g/100 l) takes about 40 to 60 minutes at 30–32°C. Next stages are similar to traditional method; however, ripening parameters are more controlled.

- **REMARKS:** CHANCO cheese is the main chilean cheese. It represents almost 50% of chilean cheese consumption. About 130 million litres of milk were processed into CHANCO in 1985 only in authorized units. There are no stastistics concerning farm cheese production in non-authorized units. Quality and yields of cheeses

produced at farm level are reported to be lower than those produced by industrial plans.

3.7 - **NAME:** **FARM GOAT CHEESE Country: CHILE**

- **AREA OF ORIGIN:** Northern area of CHILE
- **AREA OF PRODUCTION:** Northern region (region IV La Serena)
- **ORIGIN AND HISTORY:** Goat keepers with their families and their goats move from the valleys to the Andes mountains looking for feed for their animals and transforming the milk into cheese while they are going to and returning from the mountains.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Goat milk

Type: Farm goat cheese is a semi-hard ripened cheese.

Consistency:

Compoisition: 48%
Moisture:

Dry matter: 52%

Fat content: unknown.

- **TECHNOLOGY:** It is quite similar to QUESILLO technology. Raw milk is not subjected to any heat treatment. Coagulation is obtained solely with rennet. The coagulum is cut, gently stirred and moulded. Then, it is well pressed to drain off most of the whey. Hand pressing is followed by pressing with an artisanal press. Cheese is ripened during the return to the valley.
- **REMARKS:** In general, the final product is of poor microbiological quality for the shepherds do not get enough water even for their own consumption so that cheese is made

under very poor hygienic conditions. As a consequence, people hesitate to consume goat cheese, especially people living far away from the producing area. This means an over-supply of goat cheese during the peak production season, with consequent financial losses for the cheese producers.

3.8 - **NAME:** **GOYA Country: ARGENTINA/URUGUAY**

- **AREA OF ORIGIN:** Corrientes Province (ARGENTINA) and Soriano area (URUGUAY)

- **AREA OF PRODUCTION:** ARGENTINA and URUGUAY

- **ORIGIN AND HISTORY:** unknown

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: GOYA is a hard ripened cheese with rind, its body has a close texture without eyeholes and it has a slightly salted taste. It has a cylindrical shape of 25 cm diameter.

Consistency: Hard

Composition: Moisture:35%

Dry matter: 65%

Fat content: 40% FDM

- **TECHNOLOGY:** Milk is heated to 72°C for 15 seconds and cooled down to 32°C. Fermented cheese whey, used as starter, is added at the rate of 3%. Then calcium chloride is added at the rate of 0.2 g/l. Coagulation obtained with rennet powder (2 g/100 l.), takes about 15 to 20 minutes at 32°C. The coagulum is cut into birdseed size pieces which are heated to 49°C in 20 minutes and cooked for 25 to 30 minutes. Subsequently, the curd is prepressed and moulded into cylindrical moulds (25 cm

diameter, 19 cm high). It is pressed under pneumatic press for 4–5 hours with 5 turning over. After each turning over pressure is increased until it reaches 4,5 kg/cm2. Cheese is salted in brine (21 to 22 g salt/l.) at 12°C for 6 days. Then, it is ripened at 14 to 16°C for 90 days in a cheese room with 80 to 85% moisture.

- **REMARKS:** 1 800 to 2 000 tons of GOYA cheese are produced yearly and are mainly sold abroad. The fermented whey, used as starter, contains StreptococcusThermophilus and Lactobacillus Bulgaricus.

3.9 - **NAME:** **GUAYANES Country: VENEZUELA**

- **AREA OF ORIGIN:**: Guayana area
- **AREA OF PRODUCTION:** VENEZUELA
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole or partly skimmed cow milk

Type: GUAYANES is a semi-hard unripened cheese without rind. The boy is cooked and has a smooth and salty taste. It has a rectangular shape, 10 cm thick.

Consistency: Moisture: 45 to 50%

Dry matter: 50 to 55%

Fat content: 40% FDM.

- **TECHNOLOGY:** Milk is not subjected to any heat treatment before coagulation. No starters are used; coagulation is obtained only with rennet added at room temperature. Then coagulum is cut and cooked in water at 89–90°C. The

curd is constantly stirred until moulding. Cheese whey is drained off without pressure. In general, cheese is sold unpacked but, occasionally may be presented in plastic bags.

- **REMARKS:** :GUAYANES is sold directly or by middle men. Its manufacture is controlled by the Welfare and health Ministry.

3.10 - **NAME**: **OAXACA Country: MEXICO**

- **AREA OF ORIGIN:** Centre and Southern Oaxaca

- **AREA OF PRODUCTION:** MEXICO

- **ORIGIN AND HISTORY:** This cheese was introduced by the Italians who settled in Oaxaca area and its technology was developed from that of Mozarella cheese.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole or partly skimmed cow milk and/or goat milk

Type: Oaxaca belongs to the "pasta filata" types. It is a soft unripened cheese without rind. It has a close body without eyeholes. It is given the shape of a plait and its weight is from 100 g to 3 kg.

Consistency: Moisture: 48%

Dry matter: 52%

Fat content: 44% FDM

- **TECHNOLOGY:** Milk is heated to 65°C for 30 minutes. No starters are used. Coagulatrion, obtained by rennet, takes about 30 to 40 minutes at 35°C. then, curd is cut in pieces of 2 x 2 cm. Whey is drained off without pressing. Subsequently, curd is heated in water at a temperature close to melting point, stretched and braided as a plait.

Cheese may be salted directly or in brine at room temperature. It may be preserved at 4°C for 7 days.

- **REMARKS:** Its manufacture is subject to the general health regulations.

3.11 - **NAME:** **PALMITO Country: COSTA RICA**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** COSTA RICA
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS**:

Raw material: Whole cow milk

Type: PALMITO belongs to the "pasta filata" cheese type. It is a semi-hard unripened cheese without rind.

Consistency: Soft

Composition: Unknown.

- **TECHNOLOGY:** Milk is not subjected to any heat treatment. Cheese whey kept from the previous day is added as starter. Coagulation, obtained with rennet (1/4 tablet

for 20 l milk) takes about 1 hour at room temperature. Then, as much as possible of the cheese whey is drained off directly from the vat without pressing. Drained curd is cooked to 72° until forming cheese threads. Heating is stopped and the curd bulk is stretched into 1 m strips. These strips are rolled up in oval or spherical forms and cheese is subsequently salted in brine for 6 hours.

- **REMARKS:** PALMITO is usually sold by retail grocers.

3.12 - **NAME:**

Country:	
PANELA	**MEXICO**
PARAGUAY	**PARAGUAY**
QUESO BLANCO	**NICARAGUA**
QUESILLO	**BOLIVIA**
	CHILE
	ECUADOR

HISTORY AND ORIGIN: This type of cheese was probably introduced by the Spaniards when they settled in Central and Latin America. Basically all these cheeses belong to the fresh cheese type and are obtained without pressing. Their main and common characteristics is to derive from a rennet coagulum. Hereafter the name QUESILLO will be used to describe them.

DESCRIPTION AND CHARACTERISTICS:

Raw material: Whole or partly skimmed cow milk. A mixture of goat of sheep milk may also be used.

Type: QUESILLO is a fresh unripened cheeseobtained without pressing. Its curd is whitish with a close texture and a few small eyeholes due to coliforms. It has a mild and slightly salty taste which is sometimes slightly acid. Its characteristics such as shape and weight vary a lot depending upon the area of production. In

general it can be half moon shaped (Bolivia), rectangular or cylinder shaped. Its weight is from 150 to 10 kg.

Consistency: Soft

Compostion:

Humidity:	60 to 70%
Dry matter:	30 to 40%
Fat content:	40 to 50%

TECHNOLOGY: Two different technologies exist depending on whether the cheese is produced by small-scale dairies or not.

TRADITIONAL TECHNOLOGY: Whole raw milk is not subjected to any heat treatment. Usually, no starters are used and coagulation is solely obtained by renneting. As consumers prefer a mild cheese, its microbial population must be kept low.

Coagulation obtained with rennet powder or liquid rennet, takes generally 45 to 60 minutes at 30–32oC. After coagulation, the coaqulum is cut into 2 cm x 2 cm pieces and stirred gently for a short time. Then, 20 to 30% of cheese whey is drained off and brine salt is mixed with the curd. In BOLIVIA, PARAGUAY and in ECUADOR, curd may not be salted. In PARAGUAY, salted cheese is called Zacateca, and in ECUADOR, Queso Manabita. Subsequently, curd is moulded in a suitable kind of mould lined with a cloth and is slightly pressed by hand. Cheese is never really pressed and is sold immediately after production. The shelf life is only 2.4 days depending on ambient temperature and humidity. As in general the quality of milk is poor, sour flavour develops and draining of whey results in poor quality cheese.

SEMI-INDUSTRIAL TECHNOLOGY: This technology differs from the previous one mainly by the fact that heat treatment is applied. Milk is generally heated to 75oC for 15 seconds or to 65oC for 20 to 30 minutes. Wgen it is cooled down to 30 to 31oC, calcium chloride is added at the rate of 20g/100 l. Usually coagulation takes less time than in traditional technology, i.e. 30

– 40 minutes at 35oC. Next stages are similar to those in traditional technology.

REMARKS: Several points are quite different between general technologies and particular cheeses. Thus for PARAGUAY manufacture, rennet coming from dried calf/abomasum is extracted by soaking in lemon or bitter orange juice. In the same way, curd is not cut to prepare this cheese but merely ladled into moulds. In the manufacture of PANELA, cheese is salted by rubbing on each side and may be coloured with vegetable colouring substance. QUFSO FRESCO from NICARAGUA is slightly different from the others due to the fact that lactic acid producing bacteria are added to the pasteurized milk before renetting. In BOLIVIA, CHILE (in industrial factories only), MEXICO, NICARAGUA and PARAGUAY, QUESILLO manufacture is subject to national rules and regulations. Usually, cheese wrapped in a plastic bag, is sold directly on markets or by grocers and retailers; however, basically this cheese is made for home consumption. QUESILLO is consumed as staple food with sugar or jam or is used as raw material to prepare typical dishes such as SOPA PARAGUAYA (cake made from corn flour) in PARAGUAY. In general terms, microbial quality of these cheeses leaves a lot to be desired due to the low level of technology which is used and the high PH of the product (6.6 to 6.7).

3.13 - **NAME:** **PATAGRAS Country: CUBA**

- **AREA OF ORIGIN:** Eastern Provinces

- **AREA OF PRODUCTION:** Cuba de la Habana, Cienfuegos and Eastern provinces

- **ORIGIN AND HISTORY:** This cheese was developed in 1928 in Eastern provinces by Cubans

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: PATAGRAS is a semi-hard ripened cheese with a smooth rind coated with red wax. It has the shape of a flat cylinder and its weight is from 0.8 to 4 kg. Its body is firm, with some small eyeholes and it has a mild taste.

Consistency: Firm

Composition: Moisture: 42 to 43%

Dry matter: 57 to 58%

Fat content: 45% FDM.

- **TECHNOLOGY:** Milk used is standardized and pasteurized. Acidification develops from Mesophilic bacteria used as starters at the rate of 0.6 to 1%. 20 g of potassium nitrate, 20 g of calcium chloride and 20 ml of cheese dye are added to each 100 l milk processed. Coagulation, obtained by means of animal rennet, takes about 30 to 35 minutes at 32°C. Curd is put into modules and pressed for 18 to 20 hours. After taking it out of the moulds, cheese is salted in brine at 9 to 11°C. Then, it is waxed with paraffin and ripened from 30 to 75 days at 11 to 13°c. It is previously wrapped in paraffin paper before marketing.

- **REMARKS:** PATAGRAS is sold to local consumers and tourists. Cuba produces about 440 tons of PATAGRAS/year. Its manufacture is subject to Cuban regulation.

3.14 - **NAME:** **QUEIJO DE COALHO Country: BRAZIL**

(RENNET CHEESE)

- **AREA OF ORIGIN:** North Eastern States of BRAZIL

- **AREA OF PRODUCTION:** Mainly in Ceara, Pernambuco, Paraiba, Bahia and Rio Grande do Norte states It has been made for about a century in these regions, as a way to preserve milk for sale in local fairs.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: QUEIJO DE COALHO is a semi-hard cheese usually ripened but also consumed fresh, with a soft rind. The body has a open texture with a slightly salty and sour taste. The cheese is cylindrical or rectangular shaped and its weight is form 0.5 to 1.5 kg.

Consistency: Semi-hard

Composition: Unknown

- **TECHNOLOGY:** Raw milk is not subjected to any heat treatment. Sour whey, used as starter, is added at the rate of 1 to 2%. Coagulation obtained with rennet or with an enzyme extracted from a rodent (MOCO) takes about 15 min. at 37°C. Subsequently, the coagulum is cut with a knife, stirred by hand or with a spoon. About 70% of cheese whey is withdrawn, heated and poured over curd to "cook" it at 55°C. Then, all the whey is drained off, salt is added to the curd at the rate of 0.6%. Curd is moulded into wooden moulds and pressed by hand at first. Then, cheese is pressed mechanically overnight for 2 days. Cheese is ripened for up to a month at room temperature. It can be stored for up to one year but in this case it becomes very dry.

- **REMARKS:** QUEIJO DE COALHO is wrapped in paper or plastic bags and sold at local fairs. It is usually manufactured by low income families in small farms. The enzyme used as rennet is extracted from strips of stomach of a local rodent (MOCO). MOCO is a kind of nocturnal guinea pig, living in arid zones of Brazil, which subsists on plants. (Kerodon Rupestris - caviides family).

3.15 - **NAME:** **QUEIJO DE MANTEIGA Country: BRAZIL**
or **REQUEIJAO DO NORDESTE**

- **AREA OF ORIGIN:** North Eastern States of Brazil

- **AREA OF PRODUCTION:** Mainly in the States of Bahia, Ceara, Paraiba, Pernambuco, Sergipe, Alagoas.

- **ORIGIN AND HISTORY:** It has been made for about a century in this area, where the Portugese settled. Its production is a family tradition in small farms and this cheese can be found in any village fair, all over the North eastern region.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Queijo de Coalho curd and Garrafa butter

Type: QUEIJO DE MANTEIGA is a processed cheesesquare shaped with a weight of 0,4 to 1,2 kg. Its body is yellowish and has a close texture. It has a slightly salty taste and oily flavour.

- **TECHNOLOGY:** Fresh curd of QUEIJO DE COALHO (just before moulding) is used to prepare QUEIJO DE MANTEIGA curd, salted at the rate of 0.6%, it is heated to 90°C to melt in a copper kettle. A locally made butter called GARRAFA is mixed with the melted curd. Then, this blend is poured into wooden moulds and air cooled. This processed cheese is wrapped in paper or aluminium foil by hand, and its shelf life is up to 2 months at room temperature.

- **REMARKS:** QUEIJO DE MANTEIGA is also called REQUEIJAO BAIANO or REQUEIJAO CRIOULO. It is sold at local fairs.

3.16 - **NAME:** **QUEIJO MINAS Country: BRAZIL**
(MINAS CHEESE)

-**AREA OF ORIGIN:** State of Minas Gerais (Brazil)

- **AREA OF PRODUCTION:** Mainly in Minas Gerais but also in Sao Paulo and Rio de Janeiro States.

- **ORIGIN AND HISTORY:** It has been manufactured for about a century by low income farmers in the rural parts of the Minas Gerais State. Now, this cheese is mainly produced by industrial dairies and its technology has evolved to give characteristics different from what they were originally.

- **DESCRIPTION AND** CHARACTERISTICS:

Raw material: Whole raw cow milk

Type: QUEIJO MINAS is a semi-hard cheese which can be consumed fresh or ripened. In this case, it has a soft rind. It is round shaped (diameter from 10 to 16 cm) and its weight is 0.5 to 1.2 kg. It has a white colour and a slightly sour taste. Its texture is open.

Consistency: Semi-hard

Composition: Moisture: 48–56%

Dry matter: 44–52%

Fat content: 45–50% FDM

- **TECHNOLOGY:** Whole raw cow milk is not subjected to any heat treatment. Fermented whey may be added as starter at the rate of 1 to 2%. In the same way, salt may be added to milk at the rate of 2%. Coagulation, obtained with liquid calf rennet, takes 30 to 60 minutes at 35–37°C. Subsequently, coagulum is cut into 1 to 3 cm cubes and stirred for 20 minutes with a paddle. Cheese whey is partly drained off before moulding. Curd is put in metal or plastic moulds, usually without a bottom. Cheese is turned over and pressed by hand. After taking it out of the moulds, cheese is dry salted overnight at room temperature with coarse salt. This cheese may be ripened at room temperature. In this case its shelf life is up to 6 to 8

weeks.

- **REMARKS:** QUEIJO MINAS is usually not wrapped. It is sold at local markets or fairs and in the cities. It is consumed at breakfast with bread or as a dessert with guava paste. It is also used to prepare cheese bread, a regional toasted dish. QUEIJO DE SERRO is a variety of QUEIJO MINAS produced in JEQUITINHUNHA VALLEY, especially in the areas around the towns of Serro and Diamantina. Its manufacturing technology is the same as that for Queijo de Serro.

3.17 -**NAME:** **QUESILLO DE HONDURAS** **Country: HONDURAS**

- **AREA OF ORIGIN:** Southern HONDURAS

- **AREA OF PRODUCTION:** All over the country

- **ORIGIN AND HISTORY:** Manufacturing methods come from Choluteca but the exact origin is still unknown. This cheese is mainly produced in small scale dairies.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: QUESILLO DE HONDURAS belongs to the "pasta filata" type. Its body is yellowish and its taste is acid.

Consistency: Firm and elastic

Composition: There is a wide range of different composition.

- **TECHNOLOGY:** Milk is standardized according to the desired fat content. Acid cheese whey (130 to 180oD) is added as starter. Coagulation, obtained with rennet (1/4 cup/100 1) takes about 10 minutes at 30–32oC. Then, cheese whey is drained off in the desired proportion. Subsequently, the block of curd is crumbled,

salted directly (0.5%) and dry heated until it stretches without breaking. Hot curd pieces are gathered and put into the final mould.

3.18 - **NAME:** **QUESO ANDINO**(Andean cheese)

Country: PERU, ECUADOR

- **AREA OF ORIGIN:** Central Mountains of PERU

- **AREA OF PRODUCTION:** Mountains of PERU and ECUADOR

- **ORIGIN AND HISTORY:** QUESO ANDINO technology, initially traditional, was improved by the Swiss people at the beginning of the 1970s in the Mountains of the Lima area.

Then it spread out to rural dairies in the mountains of PERU and ECUADOR.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: QUESO ANDINO is a soft ripened cheese with a soft rind. The curd is white and partly lactose free. It has a smooth taste.

Consistency: Soft

Composition: Moisture: 50%

Dry matter: 50%

Fat content: 48% FDM

- **TECHNOLOGY:** Milk is heated in a jacketed vat (paila) to 65oC for 15 min. Starters (aroma forming and acid producing bacteria) are added at the rate of 1 l starters per 100 l of milk. When it is cooled at 33–34oC, imported rennet (in powder or in tablets) or natural rennet is added as well. On average, 2.5g rennet powder is added to 100 l of tepid milk. Coagulation takes 30 minutes at 33–34oC.

Subsequently, coagulum is cut with a curd knife, stirred for 10 to 15 minutes until pieces of curd reach the size of a bean, and left to settle to improve drainage. Then, 35 l of whey are removed and replaced by 30 l of hot water per each 100 l of milk used in manufacture. This stage washes the curd and gives it a soft texture. Cheese whey is drained off in perforated o). It is pressed with 4 kg concrete blocks for 30 minutes and subsequently left for 12 hours without any weight. Cheese is salted in brine at 12o C for 8 to 10 hours. To prepare the brine 10 kg of salt is dissolved into 30 litres of boiled hot water. Cheese is ripened in well ventilated ripening rooms (80 to 90% of moisture) at 13 to 15oC for 14 days, on wooden shelves. Queso andino is stored at room temperature in the mountains and in cooling rooms on the coast.

- **REMARKS:** Starters used are a mixed culture of Betacocus and Streptococus aroma forming and acid producing strains. Queso andino is sold through traditional channels. From 1970 to 1986 Swiss technical cooperation helped improve Queso Andino technical and set up dairies in the mountains of PERU. Then, development organizations spread intermediate technology all around the mountain area and contributed to improving farmers' standard of living.

3.19 - **NAME:** **QUESO BENIANO AND CHAQUENO**

Country: BOLIVIA

- **AREA OF ORIGIN:** TROPICO, CHACO area, LUIS CALVO province (CHUQUISACA department)
- **AREA OF PRODUCTION:** Eastern BOLIVIA
- **ORIGIN AND HISTORY:** This cheese was introduced by the Jesuits in the XVIth century in the Moxos Pampas. Its technology remains the same in small-scale dairies but was

improved by the Cattle Improvement Centre for Industrial Dairies (CMB).

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: QUESO BENIANO is a semi hard ripened cheese which may be consumed fresh. It can have either the shape of a cube and in this case, its weight is only 1 to 1.5 kg or the shape of a cylinder with a weight from 6 to 12.5 kg. Its body is white, homogeneous without eyeholes. It has a slightly salty taste.

Consistency: Semi-hard

Composition: Moisture: 47%

Dry matter: 53%

Fat content: 50% FDM

- Two different technologies are used to manufacture BENIANO.

TECHNOLOGY:

Traditional technology:
Raw milk is not subjected to any heat treatment. No starters are used and coagulation, obtained with calf abomasum directly soaked in milk, takes 2 to 3 hours at 25 to 28oC. Coagulum is directly ladled into moulds without cutting and pressed for 8 hours under 1.25 kg pressure/kg of curd to drain off most of cheese whey. Cheese is salted, after taking it out of the mould, by rubbing on the sides with salt. Then cheese is ripened at room temperature and sold without packing by middlemen.

Semi-industrial technology:
This technology was improved by the Cattle Improvement Centre to valorize the milk production of their Brown Swiss herd. A blend of milk, coming from Brown Swiss cattle with a small quantity of local milk is heated to 65oC for 10 to 15

minutes. Acidification develops from natural flora of raw milk. Coagulation, obtained with rennet tablets (2 kg/100 l) takes about 15 minutes at 30–32oC.

After coagulation, the coagulum is cut into pieces of 2 x 2 cm. Cheese whey is drained off from the bottom of the vat. Then, curd is put into rectangular or cylindric moulds lined with a cheese cloth. Cheese is pressed for 5 hours under a 2 kg pressure for each kilo of curd. After taking it out of the moulds, cheese is salted in brine for 12 hours at 18 to 20oC with continuous stirring brine. Cheese may be consumed either fresh or ripened after 21 days at room temperature. About 15 tons of Chaqueñ are produced per year using this technology. This production is sold by the CBM office and in the provinces under its influence.

3.20 - **NAME**:

	Country:
QUESO BLANCO	**COLOMBIA**
	COSTA RICA
	CUBA
	HONDURAS
QUESO DE FREIR	**DOMINICAN REPUBLIC**
QUESO FRESCO	**BOLIVIA**
	ECUADOR
LLANERO or **AMERICANO**	**VENEZUELA**

- **ORIGIN AND HISTORY:** This type of cheese was probably introduced by the Spaniards when they settled in Central and Latin America. Their characteristics such as shape or weight differ a lot but basically all these cheeses belong to the fresh pressed cheese type with as main characteristic, a rennet coagulum. Later on, we will use the term “fresh cheese” to describe them.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: "Fresh cheese" is an unripened fresh cheese without rind. Its curd is usually white and has a fresh and slightly salty taste. The body is usually homogeneous and may hold some small eyeholes. Its shape can vary from the cylinder to the rectangle and its weight from 3 to 12 kg.

Consistency: Semi-hard firm

Composition: Moisture: 40 to 55%

Dry matter: 45 to 60%

Fat content: 30 to 50% FDM

- **TECHNOLOGY:** The basic technology used mainly in BOLIVIA, COSTA RICA, ECUADOR, HONDURAS and VENEZUELA is given below.

Basic technology

Milk is not subjected to any heat treatment. No starters are used. Coagulation is obtained with rennet powder or tablets and takes 40 to 60 minutes at 32 to 37oC. After coagulation, the coagulum is cut with a cheese harp in 1 cm to 5 cm pieces. Subsequently, part of cheese whey is removed and curd is salted directly. The curd is put into moulds and is pressed for 12 to 24 h. Pressure is twice to three times the weight of curd processed. Cheese is usually wrapped in plastic bags. It is usually consumed fresh up to 8 days but it may be consumed after ripening like in VENEZUELA (45 days) or in COSTA RICA.

Semi-industrial technology

This technology used in CUBA and DOMINICAN REPUBLIC differs from the previous one mainly by the heat treatment of milk. In this case, whole milk is heated to 65o for 30 minutes. Then a mix of mesophylic and or thermophilic starter strains is added at the rate of 0,5 to 2%. Calcium chloride and Potassium Nitrates are added at varied rates. Broadly speaking, renneting time is shorter than in the basic technology (from 30 to 35 minutes at 32 to 35oC). In the same way, the curd is cut, salted, moulded and pressed.

- **REMARKS:** This type of cheese is usually consumed fresh up to 8 days old but it may be preserved also by brining or ripening. So, in VENEZUELA, fresh cheese called LLANERO can be stored for 45 days at room temperature without wrapping. In COSTA RICA, although most of the cheese production is consumed fresh, some cheeses may be sun dried for 5 to 6 days, then coated with salt to drain off most of the remaining water and smoked on a wood fire which gives them a particular taste. In Honduras, fresh cheese stored in brine (10% of salt), may be preserved up to 12 months in plastic bags at 30 to 35oC. In DOMINICAN REPUBLIC, cheese is always consumed fried. Fresh cheese is mainly consumed as a staple food and sold either directly or by the means of middlemen or retail grocers. In CUBA, HONDURAS, ECUADOR, VENEZUELA and DOMINICAN REPUBLIC, its manufacture is subject to national regulations.

3.21 - **NAME:** **QUESO PRATO Country: BRAZIL**

- **AREA OF ORIGIN:** Netherlands

- **AREA OF PRODUCTION:** Mainly Minas Gerais State (Brazil)

- **ORIGIN AND HISTORY:** The origin of the name PRATO is not known. The manufacturing of this cheese was initiated by a Danish dairyman, Th. Nielsen, in the early 1930s. Although the manufacturing process for Prato cheese is an adaptation of the process for cheeses like Gouda and Edam, it is considered by the Brazilians as a national cheese because of the differences due to the heating of the curd.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: PRATO cheese is a semi-hard ripened cheesewith a hard rind. Its body is yellowish and homogeneous with round or oval eyes of 3.5 mm diameter, regularly distributed and in limited number, which have a neat and shiny appearance. It has a mild taste, tending to sweet. Its rind is smooth, yellow and usually coated with wax.

Consistency: Compact, semi-hard, elastic, with butter like spreadability.

Composition: Variations are quite important, according

to the type of cheese and the dairy.

Moisture: 32 to 43%

Dry matter: 57 to 68%

Fat content: 26 to 31% (45% FDM).

TECHNOLOGY: Three or four different manufacturing methods exist:
however, only the more widely used methods are described. Standardized milk (3.6% fat, acidity below 20oD) is pasteurized and cooled down to 32 – 33oC.

Then, 25 g of calcium chloride, 0 to 25 g of sodium nitrate, 10 to 20 ml anatto, 1 to 2 l starter culture and 20 to 30 g rennet (sufficient to coagulate milk in 40 to 60 minutes) are added per 100 litres. After coagulation, the coagulum is cut into 0.3 to 0.5 cm cubes and slowly stirred for 20 minutes. 30 to 50 l of whey are drained off. The stirring continues for another 50 minutes, adding gradually 15 to

25 l of hot water (85oC) with 300 to 400 g of salt. Thus the temperature of the curd/whey mixture will rise to 40 to 42oC. Curd is considered to be “ready” when grains, after having been pressed, stick together and tend to form threads when separated from each other. Cheese whey is drained and the curd is prepressed for 15 to 25 minutes with 20 to 40 kg weight. Curd cake is cut into pieces of appropriate sizes to fill the moulds, transferred to moulds and pressed for 20 to 40 minutes under 1 to 1.5 kg/cm2. Cheeses are turned within the moulds and then pressed again for a time that ranges from half an hour to twelve hours, depending on the factory routine - (some factories press the cheese only once, normally during 2 to 2 1/2 hours). After pressing, the cheese is soaked into brine (+ 20% salt, acidity 20 to 30oD). The duration of salting depends on the size of the cheese and varies from 12 to 36 hours, temperature in the brine room is 5 to 15oC. Before packing in plastic film, the cheeses are left to dry for more or less 48 hours at 10–15oC. Some factories sell their cheese immediately while others are said to keep it for 10–30 days “maturation” (cheese room temperature varies from 5–15oC).

- **REMARKS:** PRATO cheese is considered as the number one cheese in BRAZIL, in terms of production figures, with the state of Minas Gerais as its main producer (25,000 tons/year). Five varieties of PRATO cheese exist according to their shape, weight and ripening time.

	Shape	**Weight**	**Ripening time**
Mini Lanche	Rectangular	400 g	18 days
Lanche	Rectangular	800–1000 g	21 days
Coboco	Cylindrical	200–1000 g	21 days

Prato	Rectangular	2 kg	45 days
Estepe	Square	6 kg	60 days

In general, the cheese lacks flavour, as manufacturers prefer to sell their cheese as soon as possible, without giving it time to cure. If cheese has to be stored for longer periods (e.g. during the flush season), it is done usually at low temperatures (0.5oC).

3.22 - **NAME:** **REQUESON COUNTRY: PERU**

- **AREA OF ORIGIN:** **ADEAN COUNTRIES**
- **AREA OF ORIGIN:** same as above
- **ORIGIN AND HISTORY:** It is a traditional product produced in the western part of Latin America.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sweet cheese whey obtained by rennet cogulation.

Type: REQUESON belongs to the family of cheese made from whey including Ricotta. It is the product obtained by heat coagulation of milk soluble protiens which are present in cheese whey. It has a white and lumpy body and an acid taste.

Consistency: Soft

Composition: Moisture: 50%

Dry content: 50%

Fat content: various according to the

level of whey skimmimg.

- **TECHNOLOGY:** **REQUESON** can be prepared for whole or skimmed whey. This latter is obtained by removing milk fat from the milk either by centrifugation or by gravity. some whey i sset apart in advance and is allowed to acidify

either spontaneously or with lactic acid bacteria at 38°for 24 hours. Its acidity must reach 200°D. Next day, the bulk of whey, kept cool seperately, is heated to the boiling point. When the whey temperature is about 70°C, the acidified whey is added and well mixed to the bulk. As the temperature rises in the liquid, a whitish matter appears on its surface. This precipitate is mainly made of heat coagulated albumin. The temperature increase must not be too fast and the boiling time not too long otherwise the precipitate sticks on the bottom and the sides of the vessel. In fact, as soon as whey begins to boil, it is removed from the fire and allowed to cool for a few minutes. Then, the liquid product, including clusters of proteins, is poured into a bucket lined with a cheese cloth. The four corners of the cloth are gathered and the cloth is hung for 4 to 6 hours to drain off the residual liquid product. Once strained, REQUESON is ready for consumption after flavouring either with salt, sugar or honey.

3.23 - **NAME:** **TAFI CHEESE Country: ARGENTINA**

- **AREA OF ORIGIN:** Unknown

- **AREA OF PRODUCTION:** Tafi valley in the Tucuman province of ARGENTINA

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: TAFI CHEESE is a semi-hard ripened cheese with a rind covered by fungal microflora. It has a cylindric shape and its weights is 1 to 1.25kg.

It has a smooth, close-knit body.

Consistency: semi-hard

Composition: Moisture: 50% maximum

Dry matter: 50% maximum

Fat content: 35%**FDM** minimum

- **TECHNOLOGY:** Cheese whey from the previous day's manufacture is added as starter to the whole raw milk. Coagulation, obtained with rennet, takes 2 hours at 30–31°C. Coagulum is cut and curd is heated to 39–40°C for 3 hours, when part of the whey is drained off and the curd is salted. The salted curd is placed in cylindrical metal moulds and pressed for 14–16h. the cheese is ripened for atleast 60 days at about 22°C.

3.24- **NAME: YAMANDU** Country:**URUGUAY**

AREA OF ORIGIN: Colonia area

AREA OF PRODUCTION: **URUGUAY**, Southern

ORIGIN AND HISTORY: Unknown

DESCRIPTION AND CHARACTERISTICS:

Raw material: whole cow milk standardized to 3.2% fat content minimum.

Type: **YAMANDU** is a semi-hard ripened cheese with rind. Its body is usually homogenous but may show a few small eyeholes. It has a mild and salty taste.

Consistency: Semi-hard.

Composition: Moisture: 36%

Dry matter: 64%

Fat content: 45% FDM

- **TECHNOLOGY:** Milk is heated to 72oC for 15". Once it is cooled down to 33°C, fermented whey (used as starter) is added at the rate of 1.25 to 1.75%. Natural colouring substance (achiote), calcium, chloride and sodium nitrate may be also added at the same time. Coagulation, obtained with rennet in powder or liquid, takes 40 to 45 minutes at 33oC.

Subsequently the curd is cut into 5 to 7 mm pieces and prepressed. Curd is moulded and pressed under a pressure increasing progressively up to 4 kg/cm2. Chesse is salted in brine (22%) for 48 hours at 12oC.

Then, it is left to drain off the brine well and it is packed into plastic bags or coated with red plastic wax. Ripening takes 45 days at 15 to 18oC with 85 to 95% humidity. The shelf life of this cheese is about 120 days.

4.NEAR EAST

4.1- **NAME:** **AKAWIEH**, Country: **LEBANON**

BALADI (BAIDA),

CHELAL, HAMWI,

NA'AIMEH

WHITE CHEESE **TURKEY**

QATAR

SOFT CHEESE **IRAQ**

JORDAN

- **AREA OF ORIGIN:** Hama in SYRIA, Aka in PALESTINE. Broadly speaking from all over the Near East.

- **AREA OF PRODUCTION:** All over the Near East

- **ORIGIN AND HISTORY:** Cheesemaking has been practiced in SYRIA for centuries. Practically all cheese names which are common in SYRIA originated from the centre of the country and the manufacturing method spread and became a common practice all over the Middle East. Cheesemaking in the Middle East is a seasonal industry and a proportion of the spring surplus milk is processed into different types of cheeses. Until now, the production of these cheeses is carried out mainly in private farms but also in state dairies.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole goat, sheep, or cow milk.

Type: These cheeses belong to thefresh cheese type. The curd is white with a homogeneous texture. It has a slightly salty and acid taste. The cheese has usually a square shape (10 cm wide, 2–3 cm thick) and its weight is 200 to 250g. CHELAL cheese has the special shape of strings or ropes.

Consistency: Soft

Composition: Moisture: 65%

Dry Matter: 35%

Fat content: 30 to 50% FDM

- **TECHNOLOGY:** Milk is heated in a tin or copper container to 65–80°C for 30–35 minutes. Once the milk is cooled down to 35–40°C, a mesophilic mixed culture (Streptococcus-Lactobacillus) is added as starter at the rate of 0,5 litre culture per 100 litres of milk. The artisan usually judges the temperature by experience.

Coagulation obtained with rennet in tablets (1 or 2 per 20 litres of milk), takes 1 hour at 37°C. Then the curd is left to mature for 2 or 3 hours. After that, it is collected by means of mesh wire and put in a cloth of special texture to drain off the whey and give it the desirable shape. A limited pressure of 4 kg for every kg of curd is applied to drain off the whey. Subsequently curd block is cut into square pieces. Cheese is dry salted at 15–16°C by spreading salt directly on cheese blocks. Cheese blocks are ready for sale and consumption after salting. However, they can be kept in brine (6% salt) for 2 to 3 months.

The process used for production at industrial scale differs from the traditional process described above mainly in the cutting of the curd. Curd, after coagulation, is cut into small pieces, pushed to one end of the vat with a wooden rake and piled up. Then the process becomes again similar to the traditional method. Curd blocks can be salted either by dry salting or by wet salting in saturated salt brine.

- **REMARKS:** Similar cheeses are produced under different names in most of the Near East countries. However, the technology which is supplied is very much similar. Hereunder cheeses are described which belong to the same family but whose technology presents some specific features.
- **SYRIA:** BALADI or BAIDA are white cheeses of square shape and white colour. HAMWI is a cubic kind of BALADI produced in the Hama region. NA'AIMEH is a “fine” cheese produced from the curd after draining off the whey without pressure. This gives the cheese a fine texture and sesame seeds are added to give a special flavour. CHELAL has a shape of strings like spaghetti.

  Cheeses made of raw milk have a stronger flavour but may deteriorate more rapidly. In the same way, cheeses which have not been properly salted, are soft, ripen quickly and develop unpleasant flavours. Usually, Syrian cheeses are consumed within 2–3 weeks after production. If the cheese is boiled in brine, it can be stored for longer periods. About 62,000 tons are produced every year in SYRIA. Cheese is

considered as a staple food in SYRIA and it is sold through private shops or the state sponsored general organization for retail trade.

- TURKEY: White cheese has the shape of a cube (7,5 cm each side). After pasteurization 0,02% of calcium chloride is added before rennetting which takes 1,5 hour at 30–32°C. Cheese is systematically kept in brine; its shelf life is two weeks at 10–12°C and 3 months at 4°C. Cheese manufacture is subject to food regulation and Turkish standards.
- QATAR: The fresh milk used for cheese making is usually not heated. Cheese is kept in brine.
- JORDAN: Two different types exist:

  - Soft white cheese, brine pickled made from sheep, goat and cow milk;

  -boiled cheese, brine pickled made only from sheep and goat milk.

  Cheese is given a square shape. The first type is quite similar to other cheese produced in the Middle East. The second type is boiled after pressing and can be kept for one yer in brine at room temperature whereas the soft one can only be kept for a month at 5°C. Boiled cheese is more salty than the other one.
- IRAQ Cheese has a rectangular shape (7 cm thick, 7 cm wide, 10 cm long) and its weight is 500g. Salt is added directly to the curd before moulding. It is not kept in brine and its shelf life is only 7 days. Its manufacture is subject to Iraqi standards.

4.2 - **NAME:** **ANARI Country:** **CYPRUS**

- **AREA OF ORIGIN:** CYPRUS
- **AREA OF PRODUCTION:** CYPRUS (all over)
- **ORIGIN AND** Unknown

HISTORY:

- **DESCRIPTION AND CHARACTERISTICS**

Raw material: Cheese whey from hard cheese mixed with a small amount (1 to 15%) of goat or sheep milk.

Type: ANARI is a co-preciapitate of whey proteins and casin. Its body is rather homogeneous with few eyeholes and without rind. It has the shape either of a rectangular shape (12 cm long, 9 cm wide and 6 cm thick) or the shape of a hemispherical (20 cm diameter, 10 cm height). Its weight is 0,2 to 0,3 kg.

Consistency: Soft

Composition Moisture: 50 to 70%

Dry matter: 30 to 50%

Fat content: 10 to 30% FDM

- **TECHNOLOGY:** The mixture is standardized depending on the origin of the raw material and the amount of added milk. NO starter or rennet are used. The mix is matured for 15 to 30 minutes and its heated progressively (2°C/min) to 70–°C Under gentle stirring. Proteins begin to feather after 25–35 minutes and its takes 40–60 minutes to obtain the complete feathering of the precipitate. Then the whey is run off by heating and slight pressing. Curd is cut in pieces corresponding to size of the flakes and is drained off either in a cheese cloth and is pressed slightly for 30 minutes, or in braided baskets without pressing. After taking it out of the moulds or of the cheesecloth, blocks are cut in rectangular pieces. Pressed cheeses are dry salted with 3.5% of salt whereas cheese drained in baskets are not.

- **REMARKS:** ANARI is not ripened and is usually consumed fresh as a raw material for the preparation of many dishes.

4.3 - **NAME:** **AWSHARI Country: IRAQ**

- **AREA OF PRODUCTION** IRAQ

- **AREA OF PRODUCTION** Northern part of IRAQ

- **ORIGIN AND HISTORY:** This cheese is one of the main cheeses of IRAQ. It is produced at farm scale.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep and goat milk

Type: AWSHARI is a hard ripened cheese. It has a sperical shape. The matured cheese has a sharp peppery, sometimes rancid flavour and a hard, rather brittle texture with some cracks and mechanical openings.

Consistency: Hard

Composition: Moisture: 37–47%

Dry matter: 53–63%

Fat content:

Salt: 2.5–4%

- **TECHNOLOGY:** AFter milking, the raw milk is not subjected to any heat treatment. some home-produced rennet extract (prepared by extracting a mixture of dried lamb stomachs, sugar, alum, black pepper, singibel and cloves with brine at a salt concentration of 5%) is added to obtain coagulation. Once and coagulum is cut, salt is added at the rate of 1% and the mixture is heated to 45°C under stirring for about 15 minutes. The whey is drained off and the curd transferred to long muslin bags which are continuously pressed by hand. As the curd accumulates at one end of the bag, it is twisted to press the curd and give it a spherical shape. The drained whey is collected for making “Jagi”. Dry salt is rubbed on the surface

of the cheeses twice daily for 4 days. The cheeses are then placed in sheep or goat skins, a measure of dry salt is added, the skins are closed and stored in a cool place for 3 weeks. Exuded whey is drained off, more salt is added and ripening proceeds for a further 6 weeks with intermittent whey removal. After 60–70 days, the cheese, which have become very hard, are transferred into a dry sking in which the space between the cheese is filled with Jagi. The cheese are stored then for at least 2 weeks and perhaps for as long as 6 months. Old cheese may be very hard and it is comon practice to soak them in water for 2 to 7 days before consumption. Subsequently the surface of the cheese is coated with Jagi and stored in clean dry skins. Jagi is prepared by either one of the following two methods:

1. Fresh milk, about 5%, is added to whey collected from cheese made on the previous day, and the mixture is heated at 70–90°C until the milk and whey proteins precipitate. The precitate is collected by filtration and mixed with diced garlic or Kurrat in the proportion of 5 to 1.

2. The buttermilk obtained when churning sour milk is boiled on direct fire; the curd which forms is collected and mixed with milk herbs (garlic, onion, dry roses) and salt.

4.4 - **NAME:** **BEYAZ PEYNERI** **Country: TURKEY**

- **AREA OF ORIGIN:** TURKEY

- **AREA OF PRODUCTION** TURKEY

- **ORIGIN AND HISTORY:** **Unknown**

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep milk alone or mixed with goat, cow or buffalo milk.

Type: BEYAZ PEYNERI is a semi-hard cheese ripened in brine. It has a smooth, thin and moist, wet rind without microflora. Its body is homogeneous without eyeholes. It has the shape of a cube (7,5 cm side) and its weight is 0,5 kg.

Consistency: Semi-hard

Composition: Moisture: 45–65%

Dry matter: 35–55%

Fat content: 25–70% FDM

- **TECHNOLOGY:** Milk can be heated to 60–75 °C for to 15 minutes. Calcium chloride and lactic starter can be added after pasteurization. Milk matures for 15 minutes before rennetting. Coagulation, obtained with 20–25 ml of liquid rennet/100 kg milk, take 1,5 to 2,5 hours.

Curd is cut in pieces of 2 cm and is left to settle for up to 30 minutes. Then, it is ladled into a cheese cloth and is pressed in bulk after natural draining and until syneresis ends. Subsequently, cheese cake is cut into pieces of suitable size which are directly salted in brine for 4 to 6 hours with a salt concentration of 14–16%. Salt content in cheese range from 3 to 7%. Cheese pieces are arranged in tin cans for pickling (12 to 14% salt) in brine for 120–180 days 2–5°C.

- **REMARKS:** BEYAZ PEYNERI cheese is also called SALAMURA PEYNERI, TENEKE PEYNERI OR EDIRNE PEYNERI. The average yield is 28 to 30 kg of cheese from 100 kg of milk. However, it can appreciably decrease is ripening cheese temperature is highter than 5°C, as drainage is continuing in brine.

4.5 - **NAME:** **DAANI COUNTRY:EGYPT**

- **AREA OF ORIGIN:** Unknown

- **AREA OF PRODUCTION:** **EGYPT**

- **ORIGIN AND HISTORY:** Unknown

- **DESCRIPTION AND** CHARACTERISTICS:

Raw material: Sheep milk, sometimes mixed with goat milk.

Type: **DAANI** is a soft fresh cheese with a thin, smooth and wet rind. Its body is homogenous with rare mechanical or microbial eyeholes. It has the shape of a rectangle and its weight is 250g.

Consistency: Soft

Composition: Moisture: 53 to 55%

Dry matter: 45 to 47%

Fat content: 50 to 55% FDM

- **TECHNOLOGY:** Milk is not subjected to any heat treatment. Acidification develops from natural flora of milk for 15 to 30 minutes. 2.5g/l of calcium chloride can be added. Milk acidity at this stage reaches 20 to 25°D. Coagulation, obtained partly with rennet (10 to 20 ml of liquid rennet per 100 kg milk) takes i to 2 hours. Then curd is cut and moulded in cheese cloth or on mats. It is not subjected to any pressing and it drains off naturally in 1 or 2 days. The curd block is cut into pieces of suitable size and is dry salted on surface at the rate of 5–6%. Cheese can be ripen in brine. In this case, it is kept for 90 to 120 days in brine with 14–18% salt at 7–30°C.

REMARKS: **Daani** cheese can be consumed fresh without ripening in brine.

4.6 - **NAME:** **DJAMID Country: JORDAN**

- **AREA OF** JORDAN

PRODUCTION: ORIGIN AND HISTORY: Unknown

- **DESCRIPTION AND** CHARACTERICS:

Raw material: Goat and sheep buttermilk.

Type: **DJAMID** is a hard, air dried cheese. Its weight is 0,1 to0,2 kg and its shape is spherical. Its body is very hard, dry, inlaid with salt crystals.

Consistency: Very hard

Composition: Moisture: 9–31%

Dry matter: 69–91%

Fat content: 5–10%

- **TECHNOLOGY:** Raw material used for DJAMID manufacture is sheep or goat buttermilk obtained from churning of cream previously acidified for 24 hours at 20 to 30°C. No rennet is used. Acidified buttermilk (100–150°D) is heated to 40-60°C for 30 to 60 minutes. Buttermilk protiens begin to precipitate 20 to 30 minutes after the beginning of heating. The precipitate is properly drained by stirring, heating, g and filtered on a cheese cloth. Subsequently, it is passed and formend in the shape of a ball by hand. Cheese is salted by dry salting at the rate of 10,6 to 13,8% of salt. It is sun and air dried for 8–15days. Cheese is not ripened but stabilized by heat drying and salting. **DJAMID** can be kept for 6 to 12 months in earthenware or glass jars at 10 to 40°C.

- **REMARKS:** Similar products as **DJAMID** are produced in Arab countries. They are called **DJEMID**, **DJIBDJIB**, **DJIBDJUB** or **KASCHAKAJAL**.

4.7 - **NAME:** **DOMIATI Country: EGYPT (GIBBNEH BEDA)**

- **AREA OF ORIGIN:** **EGYPT** (all over)

- **AREA OF PRODUCTION:** All over **EGYPT**

- **ORIGIN OF HISTORY:** The exact origin of**DOMIATI** is still unknown. It was known in **EGYPT** around 332 **B.C.** At that time, cheese was solely a farmhouse product. At present, **DOMIATI** is manufactured either in small scale workshops or in larger industrial diaries.

- **DESCRIPTION AND** CHARACTERISTICS:

Raw material: Buffalo and cow milk in varying proportions.

Type: **DOMIATI** is a soft fresh cheese which can be ripened by pickling. The curd is white and has a very salty taste. Its texture is homogenous with some small eyeholes. It usually has the shape of a rectangle (8 cm wide, 10 cm long and 6 cm thick) and its weight is 0,4 to1 kg.

Consistency: Soft

Composition: Moisture: 50 to 65%

Dry matter: 35 to 50%

Fat content: 20 to 45%

- **TECHNOLOGY:** Milk can be pasteurized for 60 to 80°C to 15 to 60 seconds. Salt is added directly to the milk at the rate of 6 to 14%. Acidification developd from natural flora of milk in 15 to 30 minutes. In case of pasteurized milk, calcium

chloride is added at the rate of 2 to 4g/100 kg. Coagulation, obtained mainly by means of liquid calf rennet (15–20g/100kg milk), takes 2 to 3 hours at 35 to 40°C. Subsequently, coagulum is ladled either into wooden moulds lined with cheese cloth or in bulk in a cheese cloth to form a block. Cheese in bulk is pressed for 12 to 24 hours under a pressure equal t the weight of curd. Moulded cheese are not pressed but only drained for 2–3 days. After taking it out of the cloth, the block of curd is cut into pieces of suitable size which are arranged in tins and covered with brine (14 to 18% salt). Then tins are welded and cheese may be kept up to 9 months at 20 to 25°C.

- **REMARKS:** **DOMIATI** is a very popular cheese amongst Egyptians who eat it daily either fresh or ripened by pickling after 3 months of storage. **DOMIATI** is also locally called **GIBBNEH BEDA**, **DAMIATI or DAMIETTA**.

4.8 - **NAME:** **FETA Country: TUNISIA**

- **AREA OF ORIGIN:** **GREECE**

- **AREA OF PRODUCTION:** **GREECE, TUNISIA**

- **ORIGIN AND HISTORY:** Feta originated from GREECE. Presently, it is produced in several European countries. However, these industrial cheeses made from cow milk are much different from the traditional product.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep milk, alone or mixed with goat or cow milk.

Type: Feta is a semi-hard cheese ripened in brine. It has a rectangular shape (20 cm long, 10 cm wide and 7 cm height) and its weight is 1 to 1,5 kg. Its body

is smooth and homogeneous with some mechanical eyeholes. It has a very thin rind.

Consistency: Hard

Composition: Moisture: 45–55%

Dry matter: 45–55%

Fat content: 45–59% FDM

- **TECHNOLOGY:** Milk can be standardized and pasteurized to 68–70°C for 1–2 minutes. 2 to 3% of mesophilic starter and 0.5 to 1% of thermophilic culture (yogurt) are added. Coagulation, obtained with 3.5 to 4g of rennet powder (s = 1/100.ooo) for 100 kg of milk, takes 10 to 15 minutes at 32–33°C. Milk acidity is between 18 and 22°D. The coagulum is cut in strips (with a section of 2–2.5 cm x 2–2.5 cm) and is left t settle for 5 to 10 minutes. Curd is stirred slowly and regular stops are observed. The curd is put on a cheese cloth or in moulds without any additional pressure but its own weight, drains naturally first for 4,5 hours at 25–30°C and second for 12–16 hours at 16–18°C. After pressing, curd cake is cut in cylindric or rectangular shaped pieces. Cheese is dry salted on surface and salted in brine. Salt content of cheese is 4.7%. Subsequently, traditional cheese is first ripened for 10 to 15 days at 20–25°C or shelves or in barrels with addition of dry salt and then is ripened in brine (4 to 5% salt) for 45 days at 9–14°C. Feta is kept in tin cans or in wooden barrels at 2–5°C.
- **REMARKS:** During the pre-ripening stage of feta, a typical wild microflora fo halophilic micro-organisms develops in cheese and gives it its typical organoleptic properties.

4.9 - **NAME:** **FRESH CHEESE Country: LEBANON**

- **AREA OF ORIGIN:** **LEBANON** (all over)

- **AREA OF PRODUCTION:** All over **LEBANON**
- **ORIGIN AND HISTORY**: Unknown
- **DSCRIPTION AND CHARACTERISTICS:**

Raw material: Goat, cow or sheep milk.

Type: Fresh cheese is a soft fresh cheese. The curd is homogenous and has a mild and slightly salty taste. It has the shape of a ball with a diameter of about 10 cm.

Consistency: Soft

Compositon: Unknown

- **TECHNOLOGY:** Milk is just heated to milking temperature. No starters are used. Coagulation obtained with rennet in tablets or with a piece of a new born animal abomasum takes 1/4–1/2 hour at room temperature. After coagulation, the curd is broken and once it is settled, it is shaped into balls by hand. A small quantity of ground sea salt is put into a hole made with the thumb when the ball is being made. This cheese is usually not ripened and it can keep fresh up to one week.
- **REMARKS:** Fresh cheese can be stored can be stored in dry salt to expel more whey and becomes hard and then is stored in brine for the winter period.

4.10 - **NAME:** **GRAVIERA Country: CYPRUS**

- **AREA OF ORIGIN:** GREECE
- **AREA OF PRODUCTION:** All over CYPRUS

- **ORIGIN AND HISTORY:** Unknown

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Mainly sheep milk

Type: GRAVIERA is a hard ripened cheese. Its rind is dry and smooth. Cheese loaf has a cylindrical shape with a diameter of 30–40 cm and is 10–14 cm high. Its weight is 15–18 kg. It looks curved with convex face and hoop sides. Its body is homogeneous and shows spherical eyeholes (ø = 0.5–1 cm) due to propionic fermentation.

Consistency: Hard

Composition: Moisture: 37 to 44%

Dry matter: 56 to 63%

Fat content: 40 to 50% FDM.

- **TECHNOLOGY:** Milk standardized to 2.5 – 3% fat is not subjected to any heat treatment. No starter or additives are added. Milk acidity is 16–18°D. Coagulation, obtained with 2–2.5 g of rennet per 100 kg of milk, takes 25–30 min. at 33–36°C. After coagulation, curd is cut in pieces of 0.5 cm. It is stirred first for 5 to 10 minutes at 33–36°C then curd is heated to 48–52°C in 30–40 minutes and then is heated at 48–52°C for 10–25 minutes. Curd is left to settle, then is collected with a cheese cloth for moulding. Cheese is pressed during 12–16 hours under an increasing pressure. After taking it out of the moulds, cheese is dry salted in surface during 10 to 20 days. Salt content is about 2–3%. Rind may be coated with diluted brine or olive oil. Then cheese is ripened in curing rooms at 12–18°C for 90 to 120 days

with a 85–95% humidity. Production yield is 15–18 kg/100 kg of milk.

- **REMARKS:** GRAVIERA cheese is a local adaptation of Swiss emmental. Similar products called AGRAFA, PINDOS or SKYROS can be found in GREECE.

4.11 - **NAME:** **HALLOUMI Country: CYPRUS**

HALLOM IRAQ

HELLOUM LEBANON

- **AREA OF ORIGIN:** Near East (CYPRUS, IRAQ, LEBANON)

- **AREA OF PRODUCTION:** Near East (same countries)

- **ORIGIN AND HISTORY:** It is traditionally manufactured by the shepherds. Originally it was consumed as cured cheese (ripening for at least 40 days). Later, it was produced by cheese factories and consumed both as matured and fresh cheese.

- **DESCRIPTION AND** CHARACTERISTICS:

Raw material: Sheep, goat milk or a mixture of the two.

Type: HALLOUMI is a semi—hard cheese preserved in brine. The curd is white with a close texture. It has a slightly salty acid taste. It is rectangular: 10 to 15 cm long, 6 cm wide and 4 cm high. Its weight is 0.2 to 0.3 kg.

Consistency: Semi—hard

Composition: Moisture: 32 to 42%
Dry matter: 58 to 68%
Fat content: 45 to 50% FDM.

- **TECHNOLOGY:** Traditionally, raw milk is used without any heat treatment. Nowadays industrial units are using pasteurized milk (72°C for 15 seconds). No starters or additives are used. Milk matures for 30 to 60 minutes. Coagulation obtained with lamb or kid rennet (extracted according to traditional methods or nowadays industrially) from: 2–2.5 g/100 kg of milk, takes 30 to 45 minutes at 32–35°C. After coagulation, the curd is crumbled by hand in pieces of about 5 mm and is placed into moulds which are filled up gradually and pressed by hand until a little whey comes out. The cheese after draining is removed from the moulds and is usually cooked at once in boiling whey or salted water for 30 minutes. Then cheese is pressed under a pressure of five times its weight for about 30 minutes and folded when it is still hot. HALLOUMI is salted and kept in brine at 2–5°C for up to one year.

- **REMARKS:** Several variations of this technology exist:

1. CYPRUS: Cylindrical wicker work baskets with bottom are used as moulds. After taking it out of the moulds, the curd is usually cut into 2 or more pieces before cooking and subsequent dry salting by means of salt flavoured with dried mint leaves. The production of traditional HALLOUMI cheese is gradually decreasing and replaced by the industrial production.

2. LEBANON: HELLOUM is given the shape of balls by hand and ripened for several days before cooking.

In all these countries HALLOUMI can be consumed fresh after a few days in brine and it plays a big role in people's diet.

4.12 - **NAME:** **JBEN Country: MOROCCO**

- **AREA OF ORIGIN:** Benslimane — Skhirat — Ain Aouda area
- **AREA OF PRODUCTION:** (same as above)
- **ORIGIN AND HISTORY:** JBEN has been introduced by settlers. This cheese formerly manufactured in farm houses is produced nowadays by smallscale dairies.
- **DESCRIPTION AND** CHARACTERISTICS:

Raw material:	Cow and/or goat milk
Type:	JBEN is a soft fresh cheese. Its texture is homogeneous and it has a fresh and mild taste. Its weight is 250 g.
Consistency:	Soft
Composition:	Unknown.

- **TECHNOLOGY:** Milk is usually heated for 2 to 3 minutes at 90°C. 0.5 l per 100 l of milk of bacteria culture is added. Coagulation is obtained with 2.5 to 7.5 ml of liquid rennet per 100 l of milk added before or after the milk maturation. Then, the milk is left to settle for 18 to 24 hours. Subsequently, curd is ladled into plastic moulds. Cheese is salted either after moulding, or during curd kneading, or after removal from the moulds. Cheese, after drainage for 1 to 3 hours, is packed into parchment paper. Its shelf life is about 5 days.
- **REMARKS:** JBEN manufacture is not subject to any particular regulation. It is sold through the traditional distribution network.

4.13 - **NAME:** **KASHKAVAL Country:** CYPRUS

LEBANON

TUNISIA

- **AREA OF ORIGIN:** BULGARIA
- **AREA OF PRODUCTION:** CYPRUS - LEBANON - TUNISIA
- **ORIGIN AND HISTORY:** KASHKAVAL cheese originated from BULGARIA where it has been known since the XVIth century. Its manufacture has spread since that time in many mediterranean countries.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep milk

Type: KASHKAVAL is a semi—hard cheese belonging to the “pasta filata” type. It has a cylindrical shape (20–30 cm diameter, 10–13 cm height) and its weight is 3 to 8 kg. Its body is homogeneous without eyeholes and it has a smooth rind usually wax coated.

Consistency: Semi—hard

Composition: Moisture: 40–45%

Dry matter: 55–60%

Fat content: 45–55% FDM

- **TECHNOLOGY:** Raw whole milk is not subjected to any heat treatment and matured for 15 to 30 minutes. 10 to 15 g of calcium chloride 0.5 to 1 kg of mesophilic culture are added per 100 kg of milk. Coagulation, obtained with 30–40 ml of rennet for 100 kg of milk, takes 30 to 50 minutes. Coagulam is cut in7–8 cm sized cubes and left to settle for 2 to 5 minutes. Then, it is cut again into 0.5 cm sized pieces. Cut curd is stirred vigorously for 15–20 minutes

and meanwhile heated to 37–42°C. Once curd grains settle in the bottom of the vat, curd block is pressed an drained for 1 to 2 hours. Subsequently, curd block is cut into pieces and is ripened for 2–10 hours at 20–22°C until pH reaches 5.2 (chedarring). Then ripened curd block is cut into 0.5 cm thick slices which are dipped in a hot brine (72—75°C; 5–7% NaCl) for cooking for 3 to 5 minutes. Curd is kneaded and hot moulded before cooling to 12–18°C in 12–24 h. Subsequently, cheese is dry salted on the surface every two days for 16 to 18 days and then coated with wax. KASHKAVAL is usually cured for 50 to 60 days at a room temperature of 12–16°C.

- **REMARKS:** This cheese can be consumed fresh without curing.

4.14 - **NAME** **KARICHEE Country: LEBANON**

- **AREA OF ORIGIN**: Bekaa Valley and Mount Lebanon

ORIGIN AND HISTORY: Unknown

DESCRIPTION AND CHARACTERISTICS:

Raw material: Cheese whey from cow or goat cheese manufacture

Type: KARICHEE is a soft fresh cheese obtained from cheese whey. Its body has a close texture and a sour and fresh taste.

Consistency: Soft

Composition: Unknown

- **TECHNOLOGY:** Whey is heated to 80oC for 60 minutes until whey proteins coagulate. Then, the coagulate is taken off the surface and drained off properly. No

rennet or starters are used.

- **REMARKS:** This product does not keep for more than one or two days. The production yield is 4 to 5 kg of KARICHEE for 100 kg of whey.

4.15 - **NAME** **KARISH Country: EGYPT**

- **AREA OF ORIGIN** EGYPT
- **AREA OF PRODUCTION** All over Egypt
- **ORIGIN AND HISTORY**
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Type: Sour skimmed cow milk, fermented buffalo milk and buttermilk from sour cream. KARISH is an acid coagulated fresh cheese, unripened without rind. Its body has a close texture without eyeholes. It has a white curd and a slightly salty and acid taste. It has a cylindrical shape (8–10 cm long and 15 cm diameter) with ridged surface and its weight is 150 to 200 g.

Consistency: Soft

Composition: Moisture: 70%

Dry matter: 30%

Fat content: 10 to 25% FDM

- **TECHNOLOGY:** The milk blend of various species after natural skimming is not subjected to any heat treatment. No starters are used and acidification develops from natural flora of milks. Coagulation is solely obtained by acidification in 1 to 3 days. After coagulation, the curd is ladled into a special cheese mat

called “shanda” made from Sammar plant (cyperus alopecuroides). The curd is left to settle so as to drain properly for several hours and a small amount of salt is sprinkled on it when it is firm enough. Subsequently, the mat containing the salted curd is rolled to facilitate the wheying off for 1 to 3 days. Cheese is not pressed. Then, the long cylindrical cheese in the mat is removed and cut into equal parts. This cheese may be kept for 7 to 15 days.

- **REMARKS**: This cheese is mainly manufactured by smallholders and is sold at local markets by women. It is consumed as a staple food and may be ripened by pickling for not less than 1 year. In this case, it is called Mish cheese. The KARISH manufacture is subject to regulations on quality and composition.

4.16 - **NAME:** **KASAR PEYNERI Country: TURKEY**

- **AREA OF ORIGIN**: Unknown
- **AREA OF PRODUCTION:** Unknown
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep milk only or mixed with goat milk

Type: KASAR PEYNERI is a hard ripened cheese belonging to the “pasta filata” type. It has a flat cylindrical shape (25–30 cm diameter, 5–10 cm thick). Its rind is smooth, dry without microflora and its body is homogeneous without

eyeholes.

Consistency: Hard

Composition: Moisture: 30–39%

Dry matter: 61–70%

Fat content: 37–50% FDM

- **TECHNOLOGY:** Raw whole milk is not subjected to any heat treatment. No starters or additives are added. Coagulation obtained with liquied rennet (15–20 ml (per 100 kg of milk) takes 60 to 80 minutes at 28–33oC with a milk acidity of 18–24oD. Coagulum is cut in pieces of 0.5 – 1 cm and let settle. Curd grains are gathered in a cheese cloth and are pressed between two boards for 2 to 4 hours. Curd block matures for 24 hours and subsequently is cut into pieces. Each piece is dipped by means of a plaited basket in hot water (65–75°C). Curd is given a spherical shape by hand and is moulded when still hot. Cooling takes 3 to 6 hours. The surface of the cheese, after taking it out of moulds, is dry salted every day for 10 to 30 days. Salt content of cheese is 2.5 to 4.5%. Cheese is cured in a ripening room at 12o–18oC for 60 to 90 days with 75–90% humidity.

- **Remarks:** DIL PEYNIRI is a kind of KASAR PEYNERI shaped in strips (8–10 cm long, 0.5 cm thick) which is not as salted as KASAR PEYNERI. Cheese whey coming from KASR PERNERI manufacture is used to prepare a local cheese called LOR PEYNERI. The precipitation of proteins is obtained by heating.

4.17 - **NAME:** **KEFALOTYRI Country: CYPRUS**

- **AREA OF ORIGIN:** GREECE

- **AREA OF** CYPRUS

PRODUCTION:

- **ORIGIN AND HISTORY:** Unknown

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep and goat milk

Type: KEFALOTYRI is a hard ripened cheese with a smooth dry and yellow rind. It has a cylindrical shape (30 cm diameter, 15 cm height) and its weight is about 10 kg. Its body shows eyeholes comming from proprionic fermentation.

Consistency: Hard

Composition: Moisture: 42–45%

Dry matter: 55–58%

Fat content: 45–55% FDM

TECHNOLOGY: Milk is not subjected to any heat treatment. Thermophilic and propionic bacteria culture can be added. Coagulation obtained with 2–2.5 g of liquid rennet per 100 kg milk takes 15 to 30 minutes at 32–35oC with a milk acidity equal to 18–22oD. After coagulation, coagulum is cut in 0.5 – 1 cm sized grains which are stirred and heated to 45oC in 30–40 min. Subsequently, after a last stir at 45oC for 15 to 45 minutes, curd is moulded and pressed for 12 to 16 hours. After taking it out of the moulds the cheese can be dry salted or salted in brine (20–26% of salt at 12–16oC) for 48 hours. Salt content of cheese is 3 to 5%. Then cheese is coated with plastic film or wax and ripened in a room at 15 – 20oC for 120

to 150 days with air moisture equal to 85–90%. Ripened cheese is packed in paper or in plastic film and stored at 5–10oC.

- **REMARKS:** In GREECE, similar cheeses are called PINDOS, SKYROS, VOUSCOS, LYNOTIRO depending on their production area.

4.18 - **NAME:** **MESANARAH Country: SYRIA**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** Syria
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep milk

Type: MESANARAH is a salted and spiced hard cheese.

Consistency: Hard

Composition: Moisture: 26.5%

Dry matter: 73.5%

Fat content: 26.6% FDM

- **TECHNOLOGY:** Wholesheep milk is not subjected to any heat treatment. Coagulation obtained with rennet takes 4 hours. The coagulum is placed in cheese cloth bags and left to drain for 8 hours. The drained curd is cut into small pieces (3 × 3 × 2 cm), is sprinkled with dry salt and held for 18–24 hours. The curd pieces are then scalded by boiling in brine (10% of salt) for 5 minutes

during which much fat is eliminated. Nigella grains are incorpoated into the hot pieces of curd which are then immersed in saturated brine at room temperature for 1 week. The salted spiced cheese pieces are removed from the brine and sundried for 2–3 days prior to their packaging in tight containers. The cheese are soaked in water for 24 hours before consumption.

4.19 - **NAME** **MIHALIC PEYNERI Country: TURHEY**

- **AREA OF ORIGIN:** Unknown

AREA OF PRODUCTION: Turkey

ORIGIN AND HISTORY Unknown

DESCRIPTION AND CHARACTERISTICES:

Raw material: Sheep milk

Type: MIHALIC PEYNERI is a hard cheese ripened in brine with a thick smooth and dry rind. It has no clearly defined shape and its weight is 2.5 to 5 kg. Its body is homogeneous with spherical eyeholes (2–4 mm diameter).

Consistency: Hard

Composition: Moisture: 25–43%

Dry matter: 57–75%

Fat content: 40–55%

- **TECHNOLOGY:** Raw milk is not subjected to any heat treatment. Coagulation soely obtained with 15–25 ml of liquid rennet per 100 kg milk, takes 2 hours at 25–35oC with a milk acidity equal to 16–18°D. after coagulation,

coagulum is cut in regular pieces (ø: 0,4, 0,6 mm). Then, curd is first stirred for 5–10 minutes at 26–35oC and second it is heated to 40–50oC in 10 to 30 minutes. At the end, curd grains are let to settle and subsequently are put in a cheese cloth for packing for 3–8 h. The cheese bolck is cut into pieces of required size and is salted on the surface and in brine (18% of salt) for 8–10 days. Cheese salt content is 5 to 10%. Cheeses are arranged in casks and ripended in brine (14–16% of salt) for 60 to 100 days at 5 to 18oC.

- **REMARKS:** MIHALIC cheese is also called KELLE PEYNERI.

4.20 - **NAME:** **MISH cheese Country: EGYPT**

- **AREA OF ORIGIN:** EGYPT
- **AREA OF PRODUCTION:** EGYPT
- **ORIGIN AND HISTORY** A similar type of cheese has been discovered in the tomb of Hor Aha at S'aqqara dated to the first dynasty (3200 BC). Until now the MISH has been mainly a farmhouse product.
- **DESCRIPTION AND CHARACTERISTICES:**

Raw material: KARISH cheese

Type: Mish is soft pickled cheese without rind. Its body is yellowish to brown and has a close texture without eyeholes. It has a sharp and salty taste. Its shape is cylindrical (8–10 cm and 15 cm diameter) with a ridged surface and its weight is 150 to 200 g.

Consistency: Soft, spreadable

Composition: Moisture: 60%

Dry matter: 40%
Fat content: 20% FDM

- **TECHNOLOGY:** The maufacturing technology is the same as that of Karish cheese. MISH cheese is a Karish cheese ripened by pickling. Karish cheese is usually left for several days in dry place to drain as much as possible. Then the cheese is rinsed with water and put in layers in earthware jars called zalaa or ballas. Jars used previously several times for the some purpose are preferred. salt is sprinkled over each cheese layer in the container which is then filled up with pickling solution. The pickling solution consists of buttermilk, sour skim milk (laban rayed), whey and morta (the remaining precipitate after the preparation. Red and green pepper and some old mish as a natural starter are added. the container is sealed and placed at ambient temperatrure for not less than one year.

- **REMARKS:** MISH is mainly prepared for family consumption. It is partly sold in local markets by women and through retail shops. The old pickling solution becomes thick, with similas composition, colour and flavour to MISH cheese. It is called MISH and consumed as well as the cheese as staple food by farmers and as appetizer by the rest of the population. Mish manufacture is not subject to any regulation.

4.21 - **NAME:** **PAPHITICO CHEESE Country: CYPRUS**

- **AREA OF ORIGIN:** Paphos district

- **AREA OF PRODUCTION:** Mainly Paphos district

- **ORIGIN AND HISTORY** This kind of cheese was originally produced by the sheperds or by the producers of milk for home consumption. Later on, answering the market demand, they increased their production during certain periods of the year.

- **DESCRIPTION AND CHARACTERISTICES:**

Raw material:	Sheep milk or a mixture of sheep and goat milk
Type:	Paphitico cheese is a hard ripened cheese with a hard rind. Its body is white or has a pale straw yeelow colour. It is cylindric shape and its weight is generally twice its diameter. The hard rind shows the marks of the wicker baskets used as mould. Its weight is 1 to 1.5 kg.
Consistency:	Hard
Composition:	Mosture: 30–35% Dry matter: 65–70% Fat content: 45–50%
- **TECHNOLOGY:**	Milk is not subjected to any heat treatment. No starter or additives are used. Coagulation, solely obtained with rennet from lamb or kid abomasum or recently with industrial rennet, takes about 30 minutes at 32–35°c. After coagulation, the curd is ladled into the moulds and pressed a little by hand. Moulds are filled again until they are full. Then, cheese is turned and put back in the basket. Cheese is pressed by hand and later by placing the moulds with cheese on top of each other for several hours The corresponding pressure is twice or three times the weight of the cheese processed. After taking it out of the moulds, cheese is salted by rubbing coarse salt on the surface at room temperature. Cheese is subsequently ripened for 2 to 3 months at room temperature and may be kept at a low temperature for 6 to 12 months.
- **REMARKS:**	This cheese is mainly produced during the months of February to April. It is basically manufactured by shepherds for home consumption but the surplus is retailed by grocers or sold directly to the consumers.

4.22 - **NAME:** **RAHSSR Country: EGYPT**

- **AREA OF ORIGIN:** EGYPT
- **AREA OF PRODUCTION:** EGYPT
- **ORIGIN AND HISTORY** Unknown
- **DESCRIPTION AND CHARACTERISTICES:**

Raw material: Cow and buffalo milk

Type: RAHSSR is a hard cheese unfermented. Its shape is cylindrical (25–30 cm diameter; 20 cm height) and its weight is 7 to 10 kg. It has a dry and smooth rind and its hoopside and faces are curved. Its body is brittle and holds mechanical eyeholes.

Consistency: Hard

Composition: Moisture: 30–35%

Dry matter: 65–70%

Fat content: 54–58% FDM

- **TECHNOLOGY:** Raw whole milk is not subjected to any heat treatment and matures for 15 minutes. Coagulation, obtained solely with 2 – 3.5 g of rennet/100 kg of milk takes 15 to 30 minutes at 32–35°C. After coagulation, the coagulum is cut in irregular pieces (0.5 to 1.5 cm). Curd is stirred a first time for 10 minutes and it is stirred again at 45°C for 50–60 minutes. Subsequently, it is moulded in metallic or wooden frames and it is pressed at room temperature for 15 to 20 hours. the bulk of curd is dry salted first before mixing. Then it is dry salted on the surface for 5–10

days. Air ripening takes 60 to 100 days at 12–18oC with a 85–90% relative humdity. A cheese very similar to RAHSSR is RUMT cheese. The technology is similar, weight and size are smaller. Originally, rumi was a locally produced KACHKAVAL still called Balkani.

4.23 - **NAME:** **SHANKALISH Country: SYRIA JORDAN**

- **AREA OF ORIGIN:** SYRIA
- **AREA OF PRODUCTION:** JORDAN, SYRIA
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheept and goat milk

Type: SHANKALISH is a spiced low fat ripened cheese kept in olive oil sundried. It has a sharp spicy taste.

Consistency: Hard

Compsition: Moisture: 30%

Dry matter: 70%

Fat content: 17–18% FDM

- **TECHNOLOGY:** Whole is left to settle for gravity skimming. The cream is removed and skimmed milk is coagulated by means of rennet. The coagulum is drained in cheesecloth bags for 24 hours and the curd is then salted at a rate of 27%. Spices, i.e. thyme, aniseed, paprika, nigalla and cumin may be

added. The salted, spiced curd, is kneaded and is given a spherical shape, 3–4 cm in diameter, which are ripened in a dark humid atmosphere for about a month, after which a sharp flavour has developed. The cheeses are then cleaned and either kept by putting them under olive oil or are sundried for 2–3 days. Both techiques control ripening.

4.24 - **NAME:** **TULUM PEYNIRI Country: TURKEY**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** Turkey
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep milk only or its mixture with goat and/or buffalo milk.

Type: TULUM cheese is hard cheese ripened in a sheep or goat rumen. Its shape and weight depend on the size of the stomach used. It has a dry rind with a homogeneous body without eyeholes.

Consistency: Hard

Composition: Moisture: 30–50%

Dry matter: 50–70%

Fat content: 6–56%

- **TECHNOLOGY:** Milk cna be standardized and skimmed. It is not subjected to any heat treatment. 1% of thermophilic culture (yoghurt) is added as starter.

Coagulation obtained with 10–20 ml of liquid rennet (100 kg milk) takes 75 to 100 minutes at 31–40oC with a milk acidity of 18–30°D. After coagulation, coagulum is cut into 0.5 to 3 cm size pieces. Then it is heated to 40–50oC for 5–10 min. and at the end is transferred to a cheese cloth and hung up for draining. subsequently, when curd reaches the desired moisture, it is broken into small pieces (5 cm diamerter) to be dry salted with 1 to 10% salt. Salted curd is put in a goatskin and pressed. cheese is ripened under anaerobic conditions at 6–8°C for 90 to 120 days.

4.25 **NAME:** **UMBRIS Country: LEBANON**

- **AREA OF ORIGIN:** Bekaa Valley, Chouf Mountains
- **AREA OF PRODUCTION:** Bekaa Valley, Chouf Mountains
- **ORIGIN AND HISTORY** ?Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Goat milk only

Type: Umbris is a soft cheese obtained solely by natural acidification. It is creamy and has a soft consistency which makes it spreadable. It has a sharp, salty and sour taste.

Consistency: Soft spredable

Composition: Unknown

- **TECHNOLOGY** Milk is not subjected to any heat treatment. Whole goat milk is poured in a large clay (or glass) jar with a small opening at its base closed with a

wooden plug. Rock salt is added and the closed jars are stored in a dark damp place. Acidification develops from natural flora of milk. When the separation of cheese and whey is complete (after approximately 1 week) the plug is removed and wheat straws are put in its palce for draining. After draining, the jar is refilled (along with original curd) and more salt is added. The same process is repeated during all the milking season (4 to 5 months). After the last draining, cheese can be stored in wide top containers, covered with olive oil. Cheese can also be hung in fabric bags to drain well. When it is hard enough, it can be cut and stored in salt water as Feta cheese.

II. ACIDIFIED MILKS

1. AFRICA

1.1 **NAME:**	**Country:**
AKILE NUKADWARAK	**KENYA**
AMASI	**ZIMBABWE**
AMBERE	**KENYA**
FADHI	**SOMALIA**
IKUVUGOTO	**ZAIRE**

IRGO	**ETHIOPIA**
IRIA IMATA	**KENYA**
KADAM	**MALI**
KAMABELE/KAMABOU	**KENYA**
LAIT CAILLE	**MAURITANIA**
MABISI	**ZAMBIA**
MAZIA MAIVU	**KENYA**
MARIWA	**KENYA**
MURSIK	**KENYA**
NONO KOUMOU	**BURKINA FASO**
NYAAME	**GHANA**
PINDIDAAM	**CAMEROON**
RAIB	**CHAD**
SAWA	**ZAMBIA**
SUUSAC	**SOMALIA**

These denominations refer to a variety of acidified milks or sour milks which in their essence are very much alike.

- **ORIGIN AND HISTORY** From the general standpoint, acidified or sour milk is a traditional product made to valorize milk surplus from small-scale herds.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: It may be of various origins, mainly cow or zebu milk, sometimes mixed with goat and/or sheep milk (SOMALIA, MAURITANIA and in some places in

KENYA), rearely camel milk is added (SOMALIA: SUUSAC). However, sheep, goat and camel milk can also be acidified without being mixed to cow or zebu milk.

Type: Sour milk is the product obtained by spontaneous acidfication of raw or more rarely boiled milk. The coagulum is white and it has a sour taste. Its texture is usually homogeneous.

Consistency: Semi-fluid to thick

Composition: varies with composition of the milk used.

- **TECHNOLOGY:** The daily residual fresh milk from domestic consumption is poured into a container covered with a lid. No starters are used and acidification develops after a few days, either from natural flora of milk when it is not boiled, or from the bacteria growing on the sides of the vessel. Milk is left to settle in a quiet place, often in a covered container sheltered from dust for usually 24–48 h. Coagulation time varies a lot depending on room temperature which for instance varies from 22°C in Kenya to 35°C in Northern Benin.

- **REMARKS:** Milk is usually boiled before natural fermentation all over KENYA. Sometimes, especially in South- western Africa, sour milk is stirred with a wooden stick before being consumed as a drink. In KENYA, cultured milk is sometimes coloured and flavoured with charcoal powder from a particular tree called Senetwet (MURSIK, MARIWA GIWURVE, …). Also in KENYA as in ETHIOPIA, containers used for the cultured milk process are previously smoked (IRIA IMATA, IRGO, MARIWA, MAZIA MAIVU) to avoid mould growth. In ETHIOPIA, IRGO is flavoured with fresh leaves of rue (Ruta Chalepensis var.tenuifolia). Sour milk is usually consumed as a staple food. In general, as spontaneous fermentation is uncountrolled, the quality of sour milk is rather variable.

1.2 - **NAME:**

Country:	
AMACUNDA	**ZAIRE**
ROAB	**SUDAN**
ROUABA	**CHAD**

- **AREA OF ORIGIN:**
  - In CHAD, Arbouchatak area (Chari Bagurni)
  - All over SUDAN
  - Amacunda manufacture spread from RWANDA and BURUNDI to ZAIRE
- **AREA OF PRODUCTION:** Some areas as above in SUDAN and CHAD, Northern and Southern Kivu in ZAIRE.
- **ORIGIN AND HISTORY:** Its origin is unknow. ROAB manufacture is closely bound to the cultured milk production which is a traditional way of precessing milk in this area.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cultured cow, sheep or goat milk called either Raïb in CHAD, or Ikuvugoto in ZAIRE.

Type: ROAB or ROUABA is a sour buttermilk which is a by-product of the butter making from sour milk. It is a white liquid texture is homogeneous with an even appearance. It has an acid taste with a yeast fermented aroma.

Consistency: Liquid

Composition: Fat content: 1–3%.

- **TECHNOLOGY:** Milk, either boiled or not, left to mature for 24 hours at room temperatue in a clean closed container. Acidification develops either from natural flora of milk or with the addition of 2–3% of sour milk made previously. Then, cultured milk is poured i a gourd which is vigorously shaken until the butter grains

separate from buttermilk. Butter, called GIBDE in CHAD or FURSA in SUDAN, is collected and buttermilk is ready for immediate consumption.

1.3 - **NAME:** **Country:**

ARRERA	**ETHIOPIA**
GAROOR	**SOMALIA**
NON MAÍ	**YAMI NIGER**

- **AREA OF ORIGIN:** Livestock rearing areas of these countries
- **AREA OF PRODUCTION:** Same as above, in particular SHEBELLI and GIUBA areas in SOMALIA.
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow milk

Type: These products are actually sour buttermilk obtained by churning fresh milk. Subse- quently, this by-product is acidified. It is a white liquid or semi-fluid product with a sour and acid taste. Its texture is homogeneous.

Consistency: Semi-fluid to liquid

Composition: Moisture and dry matter are unknown

Fat content: 1 to 3%.

- **TECHNOLOGY:** Raw milk is not subjected to any heat treatment before churning. Butter separated from buttermilk is collected and buttermilk is poured in a clean calabash. It is left to mature either after some sour milk has been added

(NIGER) or naturally (SOMALIA). Acidification lasts respectively for 24 or 3 hours. Then, sour buttermilk is ready for consumption. It keeps for up to 48 hours.

- **REMARKS:** In SOMALIA, milk containers are usually smoked with smoke obtained by burning of a balsamic wood called CUGID. In ETHIOPIA, it is a wholesome beverage either plain or spiced. When there is plentiful supply of fresh whole milk, the buttermilk is given to calves, milking cows and dogs without fermentation. Alternatively, it can be converted into local cheese. In general terms, this product is reserved for home consumption and is considered as a staple food by many smallholders.

1.4 - **NAME:**

Country:	
CHAMBIKO	**MALAWI**
HARD FERMENTED MILCURD	**ETHIOPIA**
MABOBO	**MADAGASCAR**
MADILA	**BOTSWANA**
MAFI	**LESOTHO**
MASHORONGA	**ZIMBABWE**
MASSE	**MOZAMBIQUE**
MAZIWA MGANDO	**TANZANIA**
SOUR MILK	**KENYA**
UMLAZA/MUTIVI	**ZIMBABWE**

These denominations refer to a variety of partly drained sour milks or concentrated fermented milks which in their essence are very much alike.

- **AREA OF ORIGIN:** South Eastern Africa
- **AREA OF PRODUCTION:** Same area as above

- **ORIGIN AND HISTORY:** Concentrated fermented milks might be the ancestor of cheeses. Probably, these products were developed by transhumant tribes of cattle breeders as a way to keep milk nutritive properties.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Raw whole cow or zebu milk

Type: Concentrated fermented milk is sour milk obtained by spontaneous acidification of raw milk which is subsequently partly drained. It is white to greenish like whey. its texture is usually curdy; it may be semifluid when curd is shaken. It has a sour or even very sour taste.

Consistency: Semi-fluid to thick

Composition: Unknown.

- **TECHNOLOGY:** Milk is not subjected to any heat treatment. Raw milk is poured into a calabash, a gourd or a clay pot and left at room temperature for 3 to 4 days. No starters are added and acidification develops from natural flora of milk. Usually, the container is covered to protect it from dust. Once milk is coagulated, some whey is removed and subsequently, some more fresh milk is added on top. This process is repeated until the container is full of partly-drained curd. The whole process takes generally one week depending on the size of the container. Then, concentrated fermented milk may be shaken before consumption and might keep for up to a week at room temperature.

- **REMARKS:** Although these products are very much similar, some differences exist depending on the area of production.

In Kenya, it is reported that after 3 to 4 days, the surface of the milk is covered with a fungal mycelium which is removed before whey is drained. The removal of whey may be done either every day for instance in ETHIOPIA or in MALAWI or all at once at the end of the fermentation as it is done in TANZANIA or in BOTSWANA.

In ETHIOPIA, it is reported that the vessels are usually smoked, after cleaning, by burning chips of Olea africana or Acopia busia. In some areas, the hot smoking chips are introduced into the vessel and whirled around inside the container for a few minutes with the lid on. In other cases, the pot is turned upside down over the smoking chips until the smoke dies down. This is done in order to prevent the growth of moulds on the sides of the container.

In Southern ETHIOPIA, the Borana pastoralists prepare a concentrated fermented milk flavoured with fresh leaves of rue (Rute Chalepensis var-tenuifolia). The whey is removed daily and fresh milk is added until the vessel is filled with hard curd. The whey is siphoned off by a wooden pipette introduced into the vessel. It is reported that the container is smoked every time whey is siponed off.

In ZIMBABWE, MASHORONGA is more drained than UMLAZA.

In MOZAMBIQUE,coagulation is obtained by means of a vegetable exzyme.

Concentrated fermented milk is almost always consumed as a staple food in the area of production, in particular by the pastoralists.

1.5 - **NAME:** **Country:**

LEITE DORMIDO-LEITE COALHADO **CAPE VERDE**

YAOURT **MADAGASCAR**

YOGHOURT **NIGERIA**

YOGHURT (ZABADI) **SUDAN**

These are yogurt like products.

- **AREA OF ORIGIN:** East Europe (BULUGARIA)
- **AREA OF PRODUCTION:** Limited to main cities of these countries.
- **ORIGIN AND HISTORY:** Yogurt was introduced by Europeans when they settled in Africa.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material	Usually reconstituted skim-milk, sometimes mixed with local cow, goat or sheep milk.
Type:	Yogurt is a cultured milk obtained by souring of milk by means of a pure culture of Lactobacillus bulgaricus and Streptococcus thermoplius bacteria. Its texture is homogeneous with an even appearance. It ia white in colour and it has an acid taste.
Consistency:	Semi-fluid to thick
Composition:	Moisture: 88% Dry matter: 12% FAt content: 16% FDM.

- **TECHNOLOGY:** Milk is heated to 95–100°C for 15 seconds in order to destory natural flora of milk especially pathogen species. a pure culture of Lactobacillus bulgaricus and Streptococcus therophilus is added at the rate of 1 to 5%. Coagulation time varies from 4 hours to 20 hours depending on the

temperature (25°C to 45°C), the kind of strains used and the amount of inoculum added. Yogurt may be either packed before fermenta- tion in small plastic containers (125 cc) or after coagulation and stirring in larger containers. Its shelf life is about 14 days.

- **REMARKS:** Yogurt may be either plain fermented milk or sweetened with sugar. It may be also either coloured or flavoured according to customers' reuqirements.

2. ASIA

2.1 - **NAME:** **AIRAG** **Country: MONGOLIA**

- **AREA OF ORIGIN:** MONGOLIA
- **AREA OF PRODUCTION** All over MONGOLIA
- **ORIGIN AND HISTORY:** AIRAG is a traditional product of MONGOLIA produced for several centuries.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Mare milk

Type: AIRAG is a fermented milk obtained by the fermentation of mare milk by means of a mixed culture of yeasts and bacteria.

Consistency: Liquid

Composition: Moisture: 90 to 91%

Dry matter: 9 to 10%

Fat content: 15 to 20% FDM

TECHNOLOGY: Milk is strained in order to remove all impurities or foreign bodies. Then, milk is heated to 65°C for 30 minutes. Cultured milk containing acid producing bacteria and yeasts is added at the rate of 20% of the amount to be processed. Milk is left in special pans at 18–20°C for 10–12 hours. AIRAG can be kept in a cool place up to one week.

2.2 - **NAME** **CHAKAH** **Country: AFGHANISTAN**

- **AREA OF ORIGIN:** All over AFGHANISTAN
- **AREA OF PRODUCTION:** Same as above
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow, sheep and goat milk

Type: CHAKAH is a fresh soft cheese obtained from acidified buttermilk

Consistency: Soft

Composition: Unknown.

- **TECHNOLOGY:** The first stage consists in making a yoghurt like product called Mast which is very close to Dahi. Once fermented milk is churned, butter is removed. Sour buttermilk paste is put in a cheese cloth for draining. Cheese cloth is hung on a bracker for 8–10 hours. Some salt is added and the product is packed in bags, pots or vats.
- **REMARKS:** This product is consumed fresh after it is made. It is available all the year

2.3 - **NAME:** **DAHI** found. **Country: UNION OF MYANMAR**
BHUTAN
INDIA
NEPAL
PAKISTAN

- **AREA OF ORIGIN:** INDIA
- **AREA OF PRODUCTION:** All over the Indian subcontinent and in the Union of Myanmar.
- **ORIGIN AND HISTORY:** The precise origin of DAHI is unknown; however, numerous references to DAHI can be found in the Vedas and other ancient Hindu scripts. It is the most important fermented milk product consumed in the Indian subcontinent.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: It is made from cow or buffalo milk or from a mixture of the two.

Type: DAHI is a yoghurt-like product. It is a kind of acidified milk with a pleasant flavour and a clean acid taste. Its colour is yellowish when made from cow milk and creamy-white when it is made from buffalo milk. It has smooth and glossy surface. The body is firm but not hard and free from gas holes.

Consistency: Firm but not hard

Buffalo Cow

Composition: Mositure: 82–85 85–88

Dry matter: 15–18 12–15

Fat content: 45% FDM 30% FDM

- **TECHNOLOGY:** There are important differences between traditional or household-scale production and industrial-scale production; they are described hereunder sparately.

1) Traditional Method

Milk is heated to boiling point and then cooled down to body temperature. DAHI or buttermilk from the previous day production is added at the rate of 0.5 to 1 percent of the amount of milk to be processed. Milk is left overnight to get sour until it coagulates. The vessel where the DAHI is kept during souring is usually no insulated; however in the coolest areas (NEPAL, BHUTAN), the container is wrapped either in cloth, in hay, or is put in a straw-box to keep the souring temperature as even as possible. When acidification is over, the titrable acidity should reach 0.9 to 1.0% lactic acid.

2) Industrial-scale Production

Homogenized milk is used by the urban dairy plants. This gives a much firmer DAHI which in general is preferred. The starter culture used contains lactic acid bacteria (namely Streptococcus thermophilus and Lactobacillus bulgaricus).

REMARKS: Other methods for preparing traditional DAHI exist. In NEPAL the bulk of DAHI is obtained without starter. In this case, acidification develops from natural flora living on the surface of vessels. Traditional DAHI may be obtained by a semi-continuous method in NEPAL. Boiled milk cooled at body temperature is poured into a wooden vessel. Some natural starter is added to the milk in the container which is covered with clothes and kept warm. The next day, a further quantity of cooled boiled milk is added and fermentation goes on. This topping up with cooled boiled milk is repeated daily until the container is full. After the last incubation, DAHI may be used

either in the usual way, i.e. for consumption, or may be churned to obtain butter. Usually, DAHI is prepared in earthenware pots. These vessels are cheap, and are used as a single service container. As they have a porous texture, moisture is absorbed by the container especially when DAHI tends to exude some whey. The use of the earthenware pots gives the DAHI a “muddy” flavour and a thicker texture which are appreciated by the Nepalese people. The earthenware pots, called “Katara”, hold from 200 g to 5 kg. They are washed with hot water before use. It is not possible to sterilize them when working at production scale. Then can be cleaned with a solution of washing soda in hot water but care has to be taken to wash them again with hot water otherwise they may break.

DAHI is called SHO in NEPAL and DEIN CHIN in the UNION OF MYANMAR. It may be consumed either plain, sweetened or salted. When DAHI is sweetened, sugar is usually added to milk before boiling. DAHI is used as raw material for many milk products such as ghee, buttermilk and other derived products (GHOL, DAHI KUSUM, SHRIKAND, SHRIKAND VADI, PANIR). Diluting with three to five times its volume of water, and with a pinch of salt and other spices DAHI forms GHOL, a soothing drink. DAHI KUSUM is another by-product and can be considered as the Indian equivalent of ice cream. It can be prepared by heating milk, sweetening, flavouring and colouring it before seeding it with starter. Allowed to set and sour to taste, DAHI KUSUM makes a delicious dish in summer (refrigerated) as well as in winter, with all the nutrients of milk in it.

In the UNION OF MYANMAR, fresh lime juice is added to milk when a new manufacture without starter is launched. In this case, coagulation takes about 20 hours.

2.4 - **NAME:** **Country:**

BOGURAR DOHI **BANGLADESH**

NATURAL YOGHURT **FIJI**

SUSU MADU KLENCENG **INDONESIA**

- **AREA OF ORIGIN:** BULGARIA
- **AREA OF PRODUCTION:** Northern part of BANGLADESH All over FIJI In the main cities of INDONESIA.
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow or buffalo milk

Type: All these products are yoghurt like products. They are all prepared by the same method used for typical yoghurt.

Consistency: Thick to semi-fluid

Composition: Moisture: 70–80%

Dry matter: 20–30%

Fat content: 6–10%

- **TECHNOLOGY:** It is identical to the one used to prepare typical yoghurt (i.e. p. 247).
- **REMARKS:** A few differences between those three countries exist according to the pretreatment of milk. In BANGLADESH, milk is heated close to boiling temperature for 4–6 hours in order to concentrate proteins of milk before coagulation.

In FIJI, some skimmed milk powder is added to milk before the heat

treatment to increase the dry matter of yoghurt and then to improve its firmness.

2.5 - **NAME:** **LASSI** **Country: INDIA PAKISTAN**

- **AREA OF ORIGIN:** PAKISTAN
- **AREA OF PRODUCTION:** Sind, Punjab (PAKISTAN) Panjab, Haryana (INDIA)
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: DAHI made from cow, buffalo, sheep or goat milk

Type: LASSI is a liquid product made from sour butter milk, obtained by churning DAHI. mixed with a small quantity of water. It is yellowish and has a sour taste.

Consistency: Liquid

Composition: Moisture: 92%

Dry matter: 8%

Fat content: Unknown.

- **TECHNOLOGY:** The first stage consists in making DAHI (i.e. p. 250). Then, the DAHI is churned to get butter. The buttermilk which may be considered as a by-product of butter manufacture is called Chhaas in INDIA. It is mixed with a small quantity of cold water to obtain a refreshing beverage called LASSI.

- **REMARKS:** LASSI is very popular product, in particular in the Northern areas of INDIA

and PAKISTAN. It is usually consumed chilled, either sweetened or salted. Its shelf life does not exceed 4 to 5 hours, and it is usually consumed as soon as it is made. LASSI is called MAHI in NEPAL. In NEPAL and in PAKISTAN, LASSI may be prepared either from whole or skimmed DAHI. When DAHI, made from whole milk, is churned by traditional methods, the butter yield is much below the theoretical level. As a matter of fact, the fat globules are scattered in the liquid phase and the losses of fat in buttermilk are more important than they are when butter is made from cream. However, LASSI prepared from soured skimmed milk has a weaker taste and flavour than that prepared from the buttermilk obtained from DAHI made from whole milk.

2.6 - **NAME:** **MISHTI DOI** **Country: INDIA**

- **AREA OF ORIGIN:** Eastern INDIA
- **AREA OF PRODUCTION:** Eastern INDIA
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow and/or buffalo milk

Type: MISHTI DOI is a sweetened variety of DAHI which is a yoghurt like product. It can be coloured or not.

Consistency: Firm but not hard

Composition: Unknown

- **TECHNOLOGY:** 6 to 6.5% of cane sugar is added to the blend of milk before boiling. Artificial colour, caramel and jaggery may be added during production. The milk is cooled to 40–45°C and inoculated with some of the product made on the previous day. The inoculated milk is poured in earthenware pots in which it is left to incubate for 12–15 hours at 40–45°C and subsequently sold. Usually, the earthenware containers are placed close to the open fire used by the milk shop for boiling milk and making sweets.

3. LATIN AMERICA

3.1 - **NAME:** **BORUGA** **Country: DOMINICAN REP.**

- **AREA OF ORIGIN:** El Cibao
- **AREA OF PRODUCTION:** All over cattle rearing areas at a household scale
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Type: BORUGA is an acidified milk obtained by spontaneous fermentation. It is yellowish and has a lumpy texture. It has a sour taste.

Consistency: Semi-fluid

Composition: Moisture: 85 to 88.5%

Dry matter: 11.5 to 15%

Fat content: 3 to 3.5%

- **TECHNOLOGY:** Raw whole milk is not subjected to any heat treatment and is left to ferment naturally. Sugar is added at the rate of 13% of the amount of milk processed. BORUGA is sold in plastic containers and can keep up to 10 days at 4°C.
- **REMARKS:** BORUGA is a very popular drink and is consumed at all times of the day.

3.2 - **NAME:** **DAHEE** **Country: GUYANA**

- **AREA OF ORIGIN:** INDIA
- **AREA OF PRODUCTION:** A few isolated areas in Guyana
- **ORIGIN AND HISTORY:** DAHEE was introduced by contractual Indian labourers. It is the same product as DAHI produced traditionally in INDIA.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Fresh or recombined cow milk

Type: DAHEE is an acidified milk obtained by natural fermentation of milk. It is white to yellowish. Its texture is homogeneous and gelatinous and it has a slightly sour taste.

Consistency: Thick

Composition: Unknown

- **TECHNOLOGY:** Raw whole milk is heated to the boiling point for several minutes. Then it is inoculated with DAHEE from previous production. After stirring, milk is allowed to ferment for 5 to 8 hours. Once coagulated, sour milk will keep for 2 days in a fridge.

- **REMARKS:** Salt or sugar can be added to improve the taste of DAHEE.

3.3 - **NAME:** **KEFIR** **Country: ECUADOR**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** All over ECUADOR
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND**

-**CHARACTERISTICS:**

Raw material: Whole cow milk

Type: In this particular case, KEFIR is an acidified milk obtained by lactic fermentation by means of Lactobacillus acidophilus and Bifidobacterium longum. It is a white liquid product which has a mild taste.

Consistency: Liquid

Composition: Moisture: 87.5%

Dry content: 12.5%

Fat content: 30% FDM.

- **TECHNOLOGY:** The whole milk is heated to 85 C for 10 minutes. It is cooled down to tepid temperature and inoculated with 2% of a pure culture of Lactobacillus acidophilus and Bifidobacterium longum. Milk is left to mature for 24 hours at room temperature.
- **REMARKS:** This product called KEFIR does not correspond with the traditional kEFIR originated from the Caucasian mountains which is obtained by fermentation of milk by means of lactose-fermenting bacteria, together with Torula and Saccharomyces yeast. The acidity may vary between 70 and 100°D and

the alcohol content between 0.5 and 1.5%. The most important lactose-fermenting bacteria are the Lactobacillus and Leuconostoc species, but Streptococcus lactis and other lactic acid producing bacteria are also found.

3.4 - **NAME:** **SOUR MILK** **Country: NICARAGUA**

- **AREA OF ORIGIN:** All over the country
- **AREA OF PRODUCTION:** Mainly in the Pacific area.
- **ORIGIN AND HISTORY:** This product was first produced not as a food but as a kind of medicine to stimulate the liver functioning.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow milk

Type: Sour milk is a fermented milk obtained by acidification of milk by means of a culture of lactic acid producing bacteria. It is a white and thick product which has a sour and acid taste.

Consistency: Thick

Composition: Unknown

- **TECHNOLOGY:** Milk is heated to 65°C for 30 minutes. Then, once it is cooled down to 28°C, it is inoculated with a culture of mesophilic bacteria. Milk is allowed to ferment for 16 to 20 hours at 28°C until acidity reaches a level of 95–100°D. Soured milk can keep at 4°C for 4 days.
- **REMARK:** SOUR MILK is obviously a generic denomination, which is used in this particular case to designate the local product made in NICARAGUA.

3.5 - **NAME:** **YOGHURT** **Country: BOLIVIA**

COLOMBIA
ECUADOR
NICARAGUA
PERU

- **AREA OF ORIGIN:** Europe
- **AREA OF PRODUCTION:** Sucre and Iboperenda provinces in BOLIVIA All over COLOMBIA and EUCADOR The Pacific area in NICARAGUA The Sierra area in PERU.
- **ORIGIN AND HISTORY:** Generally-speaking, in Latin America the manufacture of this type of product is of recent origin. It was introduced by private firms or through international cooperation and is produced at industrial level.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole or partly skimmed cow milk

Type: Yoghurt made in these countries is an acidified milk obtained by lactic acid fermentation by means of a pure culture of Streptococcus thermophilus and Lactobacillus bulgaricus similar to that produced industrially in most of the European countries for instance. It has the same colour and appearance. It has an homogeneous texture.

Consistency: Semi-fluid to thick

Composition: Fat content: 2 to 2.5%.

- **TECHNOLOGY :** Milk is heated to 80°C for 60 minutes or to 92°C for 15 seconds. Once milk is cooled down to 45°C, a pure culture of Lactobacillus bulgaricus and Streptococcus thermophilus is added at the rate of 2 to 3% of the quantity of milk proceessed. After stirring the milk is allowed to ferment for 3–4 giyrs at 42°C. Once conagulated, acidified milk keeps at 6–7°C for 15 to 21

days.

- **REMARKS:** Skimmed milk powder is sometimes added to improve yoghurt firmness. Yoghurt may be packed in bulk in large pots (200 g to 1 kg) or in single portions (160 cc). Sugar added at the rate of 10% may be used. Sometimes butteroil is added at the rate of 2% to increase the fat content.

4. NEAR EAST

4.1 - **NAME:** **DOUGH** **Country: IRAN**

- **AREA OF ORIGIN:** IRAN all over
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Type: Dough is a fermented milk, diluted in water before consumption. It is often flavoured with vegetable extracts.

Consistency: Liquid

Composition: Unknown

- **TECHOLOGY:** Whole raw milk is heated to boiling point and it is concentrated on an open fire under continuous stirring. As soon as the temperature of boiled concentrated milk reaches 45–50°C, it is inoculated with dough from previous production. Milk is left to mature overnight until it is coagulated. Subsequently, the coagulum is mixed with some water and usually flavoured with vegetable extracts.
- **REMARKS:** Nowadays, half the amount of dilution water is usually replaced by acidified

whey inoculated with 2.5% of y oghurt starter and matured overnight at room temperature.

4.2 - **NAME:** **JEMID, EQET** **Country: JORDAN**

- **AREA OF ORIGIN:** Near East Area
- **AREA OF PRODUCTION:** All over JORDAN
- **ORIGIN AND HISTORY:** It is traditionally produced in rural areas and in the desert by Bedouins.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep and goat milk

Type: JEMID is a dried fermented product obtained by dessication of sour buttermilk. It has a sour and salty taste.

Consistency: Hard

Composition: Moisture: 12%

Dry matter: 88%

Fat content. 8% FDM

Salt: 12%

- **TECHNOLOGY :** Raw whole milk is not subjected to any heat treatment. Acidification develops from natural flora of milk. As soon as milk is coagulated, it is churned by traditional method, i.e. in a goat skin. butter grains are removed and buttermilk is heated close to boiling point under constant stirring until the desired consistency is reached. Some salt is added during the drying process. JEMID is kept in bags.

- **REMARKS:** JARDAN produces yearly about 200 tons of JEMID.

4.3 - **NAME:** **Country:**

LABNEH (Laban mousafa)	**LEBANON**
LABNEH	**EGYPT**
	JORDAN
	LIBYA
	SYRIA
LABNA	**IRAQ**

- **AREA OF ORIGIN:** Near East
- **AREA OF PRODUCTION:** All over Near East
- **ORIGIN OF HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material:	Laban made from cow, sheep and or goat milk
Type:	LABANEH is drained Laban or drained yoghurt. It is a white thick paste with a homogeneous texture. It has a sour and slightly salty taste.
Consistency:	Thick but spreadable
Composition:	Moisture: 75 to 78% Dry matter: 22–25% Fat content: 50 to 70% FDM

- **TECHNOLOGY:** The first stage consists in making Laban. Then, fresh laban is put in a bag

and drained off until a spreading consistency is obtained. Usually, the bag is hung up but it may be pressed. This stage takes about 3 hours at 30°C or at a lower temperature according to the desired acidity of the final product. Cheese cloth is slightly salted on the surface during draining to avoid undesirable microflora development. Fresh IABANEH is packed in sterile plastic bags or in glass containers. It can be dried for 2 to 3 days and is then preserved in olive oil. Its shelf life is 10 to 15 days at 4°C when fresh and up to one year if it is kept under olive oil.

- **REMARKS:** LABANEH is considered as a staple food for breakfast all over the Near East.

4.4 - **NAME:** **LEBEN** **Country: MOROCCO**

- **AREA OF ORIGIN:** TURKEY
- **AREA OF PRODUCTION:** All over MOROCCO
- **ORIGIN AND HISTORY:** The manufacture of LEBEN has spread all over Mediterranean countries from the Middle East during the Ottoman dominion.
- **DESCRIPTION AND CHARACTERISTICS**:

Raw material: Cow milk

Type: LEBEN is a buttermilk. It is a white liquid production with an homogeneous texture and acid taste.

Consistency: Liquid

Compoition: Unknown

- **TECHNOLOGY:** Raw whole milk is not subjected to any heat treatment. Milk is poured in an

earthenware pot or in a goat skin called “chetkoua” and is allowed to ferment for 24 to 48 hours. Acidification develops from natural flora of milk. If the outside temperature is too low, the vessel is previously heated before pouring milk and is kept at warm temperature until coagulation is reached. Subsequently, the acidified milk is churned for 30 to 40 minutes. Once the butter is removed, about 10% of water is added to the buttermilk. Then, leben is ready for consumption. It is kept at room temperature for up to 3 days in plastic bags or in traditional vessels.

4.5 - **NAME:** **RAIBB** **Country: TUNISIA**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** All dairy areas of TUNISIA
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Raw cow milk

Type: RAIBB is an acidified milk obtained by spontaneous acidification of raw milk.

Colour: It has a white colour and an even appearance.

Texture: Coagulated curd.

Taste: Sour acid and yeast flavoured taste.

Consistency: Firm and thick

Composition: Moisture and dry matter unknown Fat content: 36% FDM

- **TECHNOLOGY:** Raw milk is not subjected to any heat treatment. Acidification spontaneously develops in 24 hours from natural flora of milk.
- **REMARKS:** RAIBB is consumed as a refreshing beverage instead of fresh milk.

4.6 - **NAME:**

	Country:
YOGHURT	**CYPRUS**
	SAUDI ARABIA
	TURKEY
LABAN	**LEBANON**
	SYRIA
KHATHER/ROBE	**QATER**
RAYEB	**JORDAN**
ZABADY	**EGYPT**

- **AREA OF ORIGIN:** Near East area
- **AREA OF PRODUCTION:** All over Near East
- **ORIGIN AND HISTORY:** This product originated from central Asian and Mediterranean countries, mainly TURKEY, LEBANON, BULGARIA and ROMANIA.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow, sheep, goat or buffalo milk according to the type of milk available.

Type: YOGHURT is an acidified milk obtained by the fermentation of lactose by means of a pure culture of lactic acid producing bacteria. It is white with a firm texture and it has a mild to sour taste.

Consistency: Firm

Composition: Unknown.

- **TECHNOLOGY:** Milk may be subjected to various types of heat treatments. In the traditional method milk is usually heated to 80–90°C for 30 minutes whereas in large-scale units, milk is heated to 85–90°C for only 15 seconds. Then, milk is inoculated either with a pure culture of Lactobacillus bulgaricus and Streptococcus thermophilus or with some Yoghurt from the previous day, at the rate of 2.3% of the amount of milk processed. Milk is allowed to acidify for 2 to 3 h. at 42–45°C. YOGHURT can keep at 5°C for up to 7 days. The acidity of the final product usually reaches 0.8 to 0.9 percent of lactic acid.

- **REMARKS** Its manufacture is subject to general health regulation only in large-scale production units. In LEBANON, garlic is sometimes added to LABAN along with pieces of ice to make a refreshing summer drink called AIRAN.

III. BUTTER AND MILK FAT PRODUCTS

1)BUTTER

AFRICA

- **NAME:** BEURRE **Country:** **MAGAGASCAR**

BUTTER	**NIGERIA**
KIBE	**ETHIOPIA**
LIBONGA	**KENYA**
MAGUTA	**KENYA**
MATEKA	**ZAIRE**
MAUTA MA MEO	**KENYA**
MAUTA MA NG'OMBE	**KENYA**
MBATA	**KENYA**
NEBAM	**MALI**
SIAGI	**TANNZANIA**
SIHIN/SUBAG	**SOMALIA**
SMEN	**TUNISIA**
SOUR CREAM BUTTER	**GHANA**
THIAGI	**KENYA**
WAGI	**BENIN**
ZUBO	**SUDAN**

ASIA

- **NAME:**	**Country:**
MA	**BHUTAN**
MAKKHAN	**INDIA**
	PAKISTAN
NAUNI GHIU	**NEPAL**

LATIN AMERICA

- **NAME:** MANTEQUILLA

Country:

BOLIVIA
ECUADOR
NICARAGUA
PERU

NEAR EAST

- **NAME:** ZEBDAH, ZIBD/ZIBDAH, ZOBDEH

Country:

EGYPT
QUATAR
SYRIA

- **AREA OF PRODUCTION:** All over the World in dairy areas.

- **ORIGIN AND HISTORY:** The exact origin of butter is unknown. However, it seems that it drives from acidified milk production which is probably the most ancient type of processing. Pastoralists were actually nomads who during their travels used to carry sour milk and who discourved that after it had been shaken for a few hours on horse/donkey or camel back, it would separate into two phases. One of them after separation was actually the forerunner of butter. It should be noted that the techonology for butter making is almost universal.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Raw whole milk from cow, buffalo, sheep, goat, yak, chauri, camel, cream from these different species, or even cheese whey coming from cheese making.

Type: Butter is the fatty product exclusively derived either from cream, milk or milk by-products. Apart from milk fat, it contains some non-fat milk solids, water and, occasionally, additives. In contrast with milk and cream, where the fat globules are

dispersed in the water phase, properly worked butter consists of water dispersed in fat. The continuous phase consists of milk fat in which acqueous droplets, some fat globules and tiny air bubbles are evenly distributed. In more practical terms, butter is a yellowship fatty paste. It is soft and spreadable at room temperature and harder if it is cold. It has a mild to slightly acid taste.

Consistency: Soft at room teperature Harder if it is cooled.

Composition: Moisture: 15 to 30% Non fat dry matter: 2 to 5 Fat content: 65 to 83%

- **TECHNOLOGY:** Usually, butter is obtained from sour milk rather than sour cream. As a matter of fact, in small workshops, either the quantity of milk is too low, or the milk is of very poor quality and has curdled before any appreciable separation of cream by gravity could take place. Raw milk is usually allowed to ferment spontaneously overnight. Then, sour milk is poured in a churn which is properly plugged. If the sour milk is coagulated and too firm, it is broken into a semi-liquid mass before filling up the churn. Sour milk is shaken usually for several hours until butter grains appear. Buttermilk is drained off and butter grains are washed, with fresh water, to remove most of the buttermilk. This addition of water improves also the butter firmness. Subsequently, butter is worked by hand to give it an homogeneous and even texture without big air or water inclusions. Butter can be packed into bottles, into open vessels in baskets, or wrapped in special paper depending on its consistency.

- **REMARKS:** Churning of sour milk is the most widespred tradi- tional method used for making butter all over the developing world. However, in Latin America and in some areas of the Near East, butter is always made from cream which can be acidified or not. Cream is usually obtained by natural separation from whole milk left to settle in a quiet place. After a few hours cream concentrates at the top of the milk by gravity. When the amount of cream produced daily is too small, the cream of a number of days may be stored in a vessel until enough is accumulated for churning. In this case, butter will certainly have an acid taste because it is difficult to avoid sontaneous

acidification of raw cream. Churning cream obtained from cheese whey is also reported as a way to obtain butter in Peru and in Ecuador. In this case, cream is extracted from cheese whey by centrifugation and then processed by traditional churning. In fact, it seems that making butter is a practice known all over the World and while the principles are similar, the manufacturing methods differ from one region to the other mostly according to the type of churning which is applied.

In Africa, the most common method used by the agropastoralists consists in shaking sour milk in a closed calabash whereas pastoralists use a goat or sheep skin. They fill it with sour milk to about two thirds of its capacity and then blow it up before closing it tightly. The sheep skin is hung between several poles and rythmically shaken until butter grains appear. This method is also widely used in Near Eastern countries. In Somalia, the Afar technique is based on putting the sour milk into a skin bag and slinging it on worker's shoulders. The skin bag is slung in such a way that the bag rests more on one side of the back so as to be reached with the elbow of one arm. Then, the bag is pushed with the elbow to swing it to and fro while the worker is walking.

In Asia, sour milk is churned in a cylindrical wooden churn which is fitted with a piston type paddle. It is pulled by the butter maker up and down until the butter is formed.

In Latin America, butter is usually made from sour or mild cream, which is churned in mechanical churns.

2. CLARIFIED BUTTER

AFRICA

- **NAME**	**Country:**
BEURRE TRADITIUONNEL	**MAURITANIA**
DINE BAGAR	**CHAD**

GHEE	**NIGERIA**
MAI	**GHANA**
NAMBOUMGON/NAN-AN-GOUM	**CAMEROON**
NEBAMNAI	**CAMEROON**
SAINILLI	**KENYA**
SAMLI	**TANZANIA**
SEMIN/SAMIN	**SUDAN**
SMEN	**MOROCCO**
	TUNISIA

ASIA

- **NAME**	**Country:**
DESI GHEE	**PAKISTAN**
GHEE	**INDIA**
	NEPAL
	BANGLADESH
HTAW BUT SI	**UNION OF MYANMAR**
MINYAK SAMIN	**INDONESIA**

LATIN AMERICA

- **NAME**	**Country:**
GHEE	**BRAZIL**
	TRINIDAD AND TOBAGO

		GUYANA
	MANTEIGA DE GARRAFA	**BRAZIL**

NEAR EAST

- **NAME**	**Country:**
MASLEE	**IRAQ**
ROGHAN	**IRAN**
SAMN	**EGYPT**
SAMNAH	
SAMNEH	**QATAR**
	JORDAN
	SYRIA
	LEBANON

- **ORIGIN AND HISTORY:** Clarified butter is widely produced and used within an area including the Indian-sub-continent, the Near East and the Northern and Eastern part of Africa. It seems that clarified butter originated from the Northeastern area of the Indian sub- continent. As a matter of fact, the word ghee stems for the old Sanskrit ghr which means bright or to make bright and it is quoted several times in the Vedas. These latter gather the most underlying and holy scriptures of the Hinduism religion. They were defined between 1800 and 1200 BC. The main advantage of clarified butter over butter is its superior keeping quality due to the almost complete removal of water during the making process. This explains partly why it is produced spreads in the hot areas in many countries. Heating destroys most of the microorganisms and enzymes. The low moisture content hampers the development of organisms that could survive heat treatment or that could recontaminate the product.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Butter made from soured milk from various animal species (cow, buffalo, sheep, goat…)

Type: Clarified butter is the oily fat product obtained by heating cream or butter. It is a liquid product usually yellowish which, depending on the technology which has been applied and keeping temperature, has an heterogenous coarse appearance, i.e.: large clusters of solidified milk fat floating in the liquid phase.

- **CONSISTENCY:** Liquid to semi-liquid
- **COMPOSITION:** Humidity + non fat solids 1–1.5% Fat content: 98.5–99%
- **TECHNOLOGY:** Traditional clarified butter is usually prepared from acidified milk. The whole raw milk is allowed to acidify spontaneously overnight. Then, traditionally sour milk is churned to obtain butter. Once the quantity of butter produced is sufficient, butter is poured into a large open pan and heated to boiling point (110–120°C) to evaporate the water. At first, the melted butter froths up and scum and sediments appear. The scum consists mainly of proteins and impurities and the sediment of not-fat milk solids. When practically all the water has been evaporated.

  frothing stops. Then, heating is stopped and the vessel removed from the fire. Once the residue has settled down during cooling, the clear fat is filtered through muslin and put into an earthenware pot, metal or glass container. Its shelf life depends on the moisture content which remains in the product. It can keep for up to one year when the humidity content is less than 1%.

REMARKS: The main features of clarified butter manufacturing are identical in every country. However, some differences exist especially as regards the duration of heating and whether or not some clarifying agent is added to the boiling butter. In the Indian sub-continent, the heat treatment is carried on until the colour of ghee becomes slightly brownish and no clarifying agent is used. In Africa, heat treatment seems to be shorter. In general, clarifying agents are always added to the boiling fat in Africa and in the Near East area. It is either crushed dates in Mauritania, wheat in the Near East area, bishop's weed and Cardamon seeds in Ethiopia, or even onion and dough in Afghanistan. Clarified butter is salted in Egypt, Qatar and in Afghanistan. It is sometimes flavoured before preservation with turmeric (Jordan), with honey and date juice (Mauritania), or with rosemary and thyme in Morocco. Nowadays, clarified butter can be made either from butter or cream under large-scale industrial conditions. Temperatures are better controlled and result in higher yields than with the traditional method. In one process, the separated cream is churned into butter which is thereafter converted into ghee. In the other, cream is directly clarified to give ghee. However, the taste and flavour of the final product are usually weaker than they are in the traditional product. Clarified butter is usually used for frying and represents the main source of food fat in many countries.

3. OTHER FATTY PRODUCTS

3.1 - **NAME:** **GAIMAR Country: IRAQ**

- **AREA OF ORIGIN:** Southern and central areas of IRAQ
- **AREA OF PRODUCTION:** Mosul, Tikriet, Baghdad, Mukdadia, Basmah, Kadsia
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow and buffalo milk

Type: GAIMAR is fresh cream with high fat content. It is thick and homogeneous. Its colour is white and it has a fresh flavour.

Consistency: Liquid

Composition: Moisture: 31%

Not fat dry matter: 8%

Fat content: 61%.

- **TECHNOLOGY:** Milk is heated, then cooled and cream is separated from milk and packaged mechanically. Its shelf life bout 4 days at 4°C.

3.2 - **NAME:** **GIBDE Country: CHAD**

- **AREA OF ORIGIN:** Arbouchatak area
- **AREA OF PRODUCTION:** Arbouchatak area (Chari Baguirmi)
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION**

AND CHARACTERISTICS:

Raw material: Sour cow milk called Raïb

Type: GIBDE is an unwashed butter which still contains some buttermilk (Rouaba). Its colour is white to yellowish and has an even appearance. Its texture is thick and homogeneous. It has a very mild taste of milk.

Consistency: Thick

Composition: Unknown.

- **TECHNOLOGY:** The gourd containing Raïb is shaken vigorously for 1 to 2 hours at room temperature until the butter grains separate from buttermilk. Fat droplets are then collected with a kind of dipper and transferred to another calabash. In this container GIBDE keeps for 21 to 30 days in a relatively cool place.

- **REMARKS:** GIBDE is sold in bulk on the market or is exchanged for other food (millet….). It is used also for cooking baby food.

3.3 - **NAME:** **KESHDA MOSAKHANA Country: EGYPT**

- **AREA OF ORIGIN:** EGYPT

- **AREA OF PRODUCTION:** All over EGYPT

- **ORIGIN AND HISTORY:** Unknown

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Buffalo milk

Type:	KESHDA MOSAKHANA is a heated fresh cream characterized by a cooked flavour. It has a sweet taste and is usually shaped in the form of a cylinder.
Consistency:	Thick
Composition:	Moisture and dry matter content are unknown Fat content: 35%
- **TECHNOLOGY:**	Milk is boiled for 30 minutes and then is poured into a shallow container (tin-plated copper container). Milk is cooled by taking part of it in a cup and pouring it into the rest of the milk. This step is repeated several times until a thick foam is formed on the surface of the milk. Meanwhile, the milk cools down to about 40°C. It is then left overnight until cream is formed on the top of milk by gravity. The thick cream layer formed over the surface of the milk is collected and formed into a cylinder. The cream cylinder is then cut into 10 cm long pieces to be sold. The shelf life of this product may be up to one week when kept in a cool place.
- **REMARKS:**	KESHDA MOSAKHANA is usually used as a topping for oriental pastries. It is marketed in small shops where dairy products are sold.
3.4 - **NAME:**	**SHMEN/SEMMA Country: ALGERIA** **MALI** **NIGER**
- **AREA OF ORIGIN:**	
- **AREA OF PRODUCTION:**	All over camel rearing areas especially in the Sahara
- **ORIGIN AND HISTORY:**	Camel butter usually contains a lot of impurities (sand, hair…) and rapidly becomes rancid. As the fresh butter is difficult to preserve, the Turags improve its keeping quality by transforming it into butter oil.
- **DESCRIPTION AND**	

CHARACTERISTICS:

Raw material: Camel milk

Type: SHMEN is a clarified butter made from soured camel milk

Consistency: Soft

Composition: Unknown.

- **TECHNOLOGY:** Fresh milk is poured into a goat skin bottle and is allowed to ferment for 12 to 24 hours at 25–30°C. This skin is never washed with water. Inside the temperature rises to 28°C. In winter, the goat skin is often placed into the ground near a warm fire to reach the optimum temperature before making butter so as to facilitate the development of the fermentation. Sour milk is poured into the churn made of a goat skin. Churning is done when the container is half filled with sour milk. Air is blown into the container and the top is tied up. It is hung on a tent pole and rapidly swung to and fro. This is done in the early morning and the amount of butter obtained is said to depend on the skill of the man doing the churning. No churning is done during the day as solar heat apparently impedes proper separation of the fat. Some cold water is added into the goat skin before the end of churning in order to improve the firmness of butter. It is then placed in a kettle and melted at 100–120°C for 30 minutes. A clarifying agent is added to hot butter and it is stirred with a wooden spoon. This agent can be crushed dates or a grated, roasted piece of ram horn, or also leaves of certain plants or seeds. Heating destroys most of the bacteria and the clarifying agent collects the dirt and floats to the top, where it can be skimmed off. If dates are used as clarifying agent, it is then given to children. If not, it is thrown away. The leaves give the specific colour and aroma to the butter.

- **REMARKS:** This clarified butter is used for cooking and is not eaten as butter. the

buttermilk is used to prepare a dry cheese: AFIG. It is known as SUBAG in SOMALIA.

IV. OTHER MILK/MILK BASED PRODUCTS

1. AFRICA

1.1 - **NAME** **AMAVUTA** **Country: ZAIRE**

- **AREA OF ORIGIN:** RWANDA, BURUNDI
- **AREA OF PRODUCTION:** Northern area of Kivu (Masisi) and southern area of Kivu (Idjwi Island on the Kivu Lake, frontier area).
- **ORIGIN AND HISTORY:** This product originated from the Tutsi tribes area. The Tutsi are pastoralist tribes partially migrated from RWANDA and BURUNDI to Kivu in ZAIRE about 50 years ago.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk and pieces of rotten wood (MUSAGAVU, KANYAGASAMBO and UMUSHENGEZI).

Type: AMAVUTA is a body cream used by young ladies. It has a yellowish colour, a spreadable consistency and a rancid flavour.

Consistency: Firm but spreadable.

Composition: Unknown.

- **TECHNOLOGY:** Raw whole milk is allowed to acidify for 3 days in an earthenware pot. Once coagulated, the sour milk is poured in a pan and heated to boiling point with some pieces of dried wood or leaves of eucalyptus. These pieces of wood are produced from fragrant species. Pieces of fresh wood from which bark is removed, are cut and allowed to rot. Subsequently, they are dried before use. Under the effect of heating and stirring, milk fat melts and comes on the top of the liquid. This flavoured oil is collected and poored into a small wooden vessel closed with a lid. The shelf life of this product depends on the quality of the oil.
- **REMARKS:** In the ancient times, AMAVUTA was also used to soften skins and leather.

1.2 - **NAME:** **CHAK MAPUO** **Country: KENYA**

- **AREA OF ORIGIN:** Nyanza Province (KENYA)
- **AREA OF PRODUCTION:** Ukwala Division, Siaya District (KENYA)
- **ORIGIN AND HISTORY:** This product is closely associated to the life of Luos tribes. It is a traditional product and has limited production.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole zebu milk

Additives: Urine collected from heifers and stored for 1–2 days before use.

Type: CHAK MAPUO is acidified buttermilk obtained after fat has been separated

from acidified milk. It is a liquid product containing some clusters of fat globules which remain after churning. It has a yellowish colour and a sharp and sour taste.

Consistency: Liquid with a lumpy texture.

Composition: Unknown.

- **TECHNOLOGY:** Raw milk is not subjected to any heat treatment. The gourd used as vessel to prepare CHAK MAPUO is first cleaned by shaking a mixture of warm water and sand in it. After a first rinse with cold water, the gourd is finally rinsed with heifer urine and then left to dry upside down. According to the quantity of fresh milk available, the gourd is filled to about two thirds of its capacity all at once or by additions at several times. Raw whole milk is allowed to ferment spontaneously for 2 to 3 days at room temperature. Once coagulated, a little heifers urine which was collected one or two days before is poured on the top of the acidified milk which is churned with the gourd well closed. This latter is uncorked from time to time to release gas. CHAK MAPUO is the mixture of butter grains floating on sour buttermilk. When the producer decides to make ghee, butter grains are collected on the surface of CHAK MAPUO and stored in another container until the amount available is sufficient. Meanwhile, some urine is poured on the butter to improve its firmness and preservation and to give it a nice yellow colour.

1.3 - **NAME:** **MKANGO** **Country: KENYA**

- **AREA OF ORIGIN:** Mbololo area

- **AREA OF PRODUCTION:** Taita (KENYA)

ORIGIN AND HISTORY: MKANGO was considered as a concentrated food consumed mainly by travellers. Nowadays it is consumed as a desert. It is exclusively prepared for home consumption.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole or skimmed zebu milk

Additives: Roasted maize flour, honey, butter or any cooking oil if skimmed milk is used.

Type: MKANGO is a thick and dried paste which can be cut with a knife. It has a brownish colour, a grainy texture and a sweet taste. Its size and shape depend on the container used for baking.

Consistency: Thick

Composition: Unknown.

- **TECHNOLOGY:** Some maize grains are roasted in a pan without oil until they become brown. Then, they are ground to obtain a brownish flour which is mixed with boiled milk (whole milk preferably) and liquid undiluted honey. Some more milk is added until the mix consistency is like porridge (uji). This mixture is heated under continuous stirring to remove most of the water. At this stage, its consistency is similar to that of mashed potatoes. The vessel containing the paste is closed with a lid and covered with embers. Cooking time depends on the initial consistency; however, it takes usually the whole night. Then, the saucepan is removed from the fire and the paste is ready for consumption. It is usually stored in the container used for baking and its shelf life is up to two months.

1.4 - **NAME:** **NYUKA MAR CHAK** **Country KENYA**

- **AREA OF ORIGIN:** Luo land (Nyanza province)

- **AREA OF** South Nyanza district (KENYA)

PRODUCTION:

- **ORIGIN AND HISTORY:** It is a traditional product prepared by Luos.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Fermented whole milk from zebu.

Additives: Sugar, sorghum flour, water and sometimes Fat (margarine).

Type: NYUKA MAR CHAK is a porridge made from sorghum flour, fermented milk and sugar. It has a brownish colour and a sweet taste.

Consistency: Thick

Composition: Unknown.

- **TECHNOLOGY:** Water is poured in a special saucepan and heated to boiling point. Meanwhile, sorghum flour is mixed with a little cold water to facilitate its dispersion. Then, boiling water is added little by little to the flour and the mix is vigorously stirred on fire until it reaches boiling point. Subsequently, this paste is removed from fire and some fermented milk and sugar are added to it. The porridge is then ready to be served.

- **REMARKS:** This dish which is usually prepared for home consumption, can also be sold on the market. Its shelf life is about 24 hours at room temperature.

1.5 - **NAME:** **OMOKORA** **Country: KENYA**

-**AREA OF ORIGIN:** Bogetutu area, Kisii (KENYA)

-**AREA OF PRODUCTION:** Central Kitutu location - Kisii

-**ORIGIN AND** Unknown

HISTORY:

-**DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow, goat milk and cow blood (Amanyinga)

Type: OMOKORA is a ripened lumpy product. It has a darkbrown colour and a sour taste.

Consistency: Soft

Composition: Unknown

- **TECHNOLOGY:** The raw milk is heated to boiling point and cooled down. Meanwhile, some fresh cow blood is subjected to a similar treatment. Then they are mixed together to spontaneously ferment for one week at room temperature. No starters are used. the shelf life of this product is about two weeks.

- **REMARKS:** This product is used as a staple food in some areas; however, its manufacture tends to decrease due to religious principles which advise people against consuming blood as food.

1.6 - **NAME:** **SILMISSAFANDE - KATARE**

Country: BURKINA FASO

- **AREA OF ORIGIN:** North and northeastern part of BURKINA FASO

- **AREA OF PRODUCTION:** All over BURKINA FASO

- **ORIGIN AND HISTORY:** This product originated from north/north- western part of BURKINA FASO where peuhl tribes live. These transhumant pastoralist people have developed the manufacture of this soap which spread all over the country.

- **DESCRIPTION AND**

CHARACTERISTICS:

Raw material: Cream obtained from cow milk, potash, small millet flour.

Type: SILMISSAFANDE is a traditional soap made from milk cream, potash and small millet meal. It has a shape of grey spheres with a varying weight. It has no smell; its texture is even.

Consistency: Soft, spreadable

Composition: unknown.

- **TECHNOLOGY:** Cream separated by gravity from cow milk is melted in a pan. Some potash and small millet meal are added to the boiling fat under continuous stirring. Once obtained, the soap paste is kneaded by hand and divided into small spheres. The soap can keep in a calabash for an indefined time.

1.7 - **NAME:** **UMTHUBI MUNHAMBA** **Country: ZIMBABWE**

- **AREA OF ORIGIN:** Matabeleland (Umthubi) Mashonaland (Munhamba)

- **AREA OF PRODUCTION:** Matabeleland (Umthubi) Mashonaland (Munhamba)

- **ORIGIN AND HISTORY:** Unknown.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow colostrum

Type: UMTHUBI is the product obtained by heat coagulation of colostrum.
Consistency: Firm

Composition: Unknown.

- **TECHNOLOGY:** Fresh colostrum is heated to boiling point for 3 minutes under continuous stirring to avoid scorching. As soon as proteins coagulate, colostrum is removed from fire; stirring is continued during cooling.

- **REMARKS:** Another type of coagulated colostrum is produced in Mashonaland in ZIMBABWE: This product called MUNHAMBA is obtained by mixing boiled colostrum with corn flour. The blend is heated until proteins precipiate and it is cooled before consumption. Both these products are made only for home consumption.

2 ASIA

2.1 - **NAME:** **BASUNDI** **Country: INDIA**

- **AREA OF ORIGIN:** Western INDIA

- **AREA OF PRODUCTION:** Same as above

- **ORIGIN AND HISTORY:** The origin of the product is not known but it has been traditionally prepared for centuries in the Western part of INDIA as a dessert, served on special occasions such as weddings.

- **DESCRIPTION AND** CHARACTERISTICS:

Raw material: Cow or buffalo milk

Type: BASUNDI is a sweet concentrated milk to which flavours and nuts are

added. The product is served chilled as a dessert. It looks like condensed milk with flakes. It has a light brown colour with thin flakes in a thick fluid. It has a cooked pleasant flavour similar to condensed milk which is relished by the consumer.

Consistency: Heterogeneous

Composition: Fat content: 18–22%

Milk: 28–32%

Sucrose: 20–33%.

- **TECHNOLOGY:** Raw milk is heated to boiling point in a shallow pan, The heat coagulated film that appears on the surface is collected and spread on the sides of the vessel. The process of collecting the film and spreading it on the sides is continued as concentration proceeds to a point where the volume of milk is reduced to one-half of the original volume. Then, the pan is removed from the fire and sugar is added along with nuts and flavours. The mass is mixed until the sugar is dissolved. The product is cooled and served chilled.

- **REMARKS:** About 25 000 tons of BASUNDI are produced each year in INDIA by small workshops.

2.2 - **NAME:** **DODOL SUSU** **Country: INDONESIA**

-**AREA OF ORIGIN:** Unknown

-**AREA OF PRODUCTION:** Baryumas regent's

-**ORIGIN AND HISTORY:** DODOL SUSU production was developed four years ago in order to valorize the milk surplus produced by smallholders in Central Java.

-**DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow or buffalo milk
Additives: Sugar, wheat flour

Type: DODOL SUSU is considered as a delicacy. It is a brown and jelly-like product with a sweet taste,

Consistency: Jelly-like

Composition: Unknown.

- **TECHNOLOGY:** Milk is boiled and mixed with sugar. This blend is heated to boiling point for 2 hours and a half. Then, some wheat flour is added little by little and is well mixed. After 30 minutes, once the mix is thick enough, the paste is removed from the fire and cooled at ambient temperature. It is packed in plastic bags and stored at room temperature. Its shelf life is about 90 days.

2.3 - **NAME:** **EZGIY** **Country: MONGOLIA**

- **AREA OF ORIGIN:** MONGOLIA
- **AREA OF PRODUCTION:** All over the country
- **ORIGIN AND HISTORY:** EZGIY is a product which was made and consumed in MONGOLIA since time immemorial.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow, goat, sheep milk

Type: EZGIY is a milk protein based product. It has a yellowish colour and a dry lumpy texture with a milky flavour and a sweet taste.

Consistency: Hard

Composition: Moisture: 10%

Dry matter. 90%

Fat content: 22%

- **TECHNOLOGY:** Whole fresh milk is heated in an open pan to boiling point. Boiling is continued until milk proteins coagulate. Once coagulated, milk is removed from the fire and whey is drained off. Then, the precipitate is steamed at a temperature of 90°C until it is completely dried. This dried product can be stored for up to 6 months.
- **REMARKS:** It is produced at home as well as in milk processing factories.

2.4 - **NAME:** **KEMBANG GULA SUSU** **Country: INDONESIA**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** Indonesia
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Skim milk powder

Additives: Sugar, wheat flour or gelatin and flavouring substances.

Type: KEMBANG GULA SUSU is a sweet delicacy prepared from milk and sugar. It is shaped into small brown pieces which have a firm texture and a milky sweet taste.

Consistency: Firm

Composition: Unknown.

- **TECHNOLOGY:** Recombined skim milk is heated in a shallow pan under continuous stirring until its volume is reduced to half of what it was initially. A quantity of sugar equal to the amount of milk processed is heated separately until it melts. Either gelatin or wheat flour is added to milk in small quantities as thickening agent before the desired concentration is reached. Then, the concentrated milk and the melted sugar are well mixed and the final product is flavoured with chocolate essence or vanilla. The product is divided into small size pieces which are wrapped in coloured paper.

2.5 - **NAME**: **KHEER Country: INDIA**

PALPAYASAM NEPAL

- **AREA OF ORIGIN:** Northwestern area of the Indian sub- continent.
- **AREA OF PRODUCTION:** Northern, western and central regions of the Indian subcontinet - NEPAL
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow milk

Additives: Rice, sugar, chopped cashew nuts and cardamon.

Type: KHEER is a sweetenend product of thick consistency resembling rice pudding.

Consistency: Thick

Composition: Whole milk Skimmed milk

Moisture: 45–55 40–50
Dry matter: 45–55 50–60
Milk fat: 15–25% 0.5%
Lactose: 14–16% 14–16%
Protein: 12–13% 12–13%
Ash 3–3.5% 2.5–3.0%
Cane sugar 15–25% 15–25%

- **TECHNOLOGY:** Coarse rice previously soaked in water is added to milk in the porportion of six to seven percent as well as four to eight percent of cane sugar. With the addition of sugar the concentration of milk reaches 3 to 1. The mixture is simmered until the rice softens and shows signs of gelatinization, leading to substantial thickening of the product. Chopped cashew nuts and cardamon are usually added at this stage.
- **REMARKS:** This product is mainly prepared for immediate consumption at home. In southern INDIA, a sweetened product similar to KHEER is prepared. The product called PALPAYASAM is made in the same way as KHEER but sugar or jaggery (coarse brown Indian sugar made from palm-sap), flavouring substances and saffron are usually added. Fruits like jack fruit are optional ingredients.

2.6 - **NAME:** **KHOA Country: BHUTAN**
INDIA
KHAWA NEPAL
MAWA PAKISTAN

- **AREA OF ORIGIN:** Indian subcontinent
- **AREA OF** All over the Indian subcontinent

PRODUCTION:

- **ORIGIN AND HISTORY:** Its origin is unknown. However, it has been prepared for centuries in INDIA as the raw material for sweet making. About 600 000 metric tons of KHOA are produced in INDIA alone. Usually the preparation of KHOA is the easiest way of preserving milk produced during the flush season. In many places KHOA manufactured in January – February is kept in cold store for use in the summer season.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow and/or buffalo milk

Type: KHOA is a kind of concentrated whole milk. It is a paste which has a white to yellowish colour with just a tinge of brown. It has a slightly oily or granular texture, and a rich nutty flavour associated with a milk cooked and sweet taste due to the high concentration of lactose.

Consistency:

Composition: Moisture: 28 to 30%

Dry matter: 70 to 72%

Fat content: 25 to 26%.

- **TECHNOLOGY:** A small quantity of milk (3–5 kg) is poured into a shallow open pan and is heated directly over a smokeless strong fire. The milk is brought to boiling point while being stirred slowly with a scraper using a circular movement and scrapping firmly all parts of the pan in contact with the milk. This is done in order to avoid scorching of milk solids, sticking to the sides of the pan during the concentration. Continuous evaporation takes place and milk thickens rapidly. At a certain concentration, usually of 2.5 to 2.8 times, the precipitation of proteins begins. Concentration then takes place at a faster

rate and colour changes. Heating is reduced to 82–87°C and stirring and scraping is intensified to avoid browning of milk solids due to scorching. The viscous milk begins to form a semi-solid mass. The vigourous agitation induces an emulsification of fat which, therefore, becomes evenly distributed throughout the body of the finished product. When the KHOA mass begins to become loose on the sides and the bottom of the pan, heating is stopped. Then, the KHOA is formed into pats by working and cooling the contents. The pats are allowed to cool down and may be wrapped in a large batch. KHOA shelf-life depends on the level of contamination with moulds and bacteria from external sources. Usually KHOA is prepared just before the manufacture of sweets.

- **REMARKS:** Several types of KHOA exist in INDIA, depending upon the specific uses. They are “PINDI”, “DHAP”, “DANEDAR” and “HARIYALI-KHOA”. The latter is obtained after a certain time of storage. Such KHOA acquires a green colour due to moulds growth on the surface of the pats. HARIYALI means green KHOA. This KHOA is preferred for the preparation of a type of sweets called GULABJAMUN for it gives a grainier texture to the product. The other types: PINDI, DHAP and DANEDAR are reserved for the following uses:

Type Fat Dry matter Specific sweets

(per cent) prepared

PINDI 21–26 67–69 BURFI, PEDA

DHAP 20–23 56–63 GULABJAMUN, PANTOOA

DANEDA 20–25 60–65 KALAKAND

Milk of high acidity produces a granular KHOA known as “DANEDA”. Buffalo milk is preferred for KHOA making because it yields a whiter product with a

soft, loose body and a smooth granular texture which makes it suitable for the preparation of high-grade KHOA sweets. A minimum of 4 percent fat for cow milk and 5 percent fat for buffalo milk is necessary to obtain the suitable body and texture in KHOA. Lower levels of fat result in undesirable hard body and coarse texture. The traditional trade usually pays for milk on the basis of the yield of KHOA. Yield of KHOA from cow milk is usually about 18 percent and 20 percent when made from buffalo milk.

2.7 - **NAME:** **KRUPUK SUSU** **Country: INDONESIA**

- **AREA OF ORIGIN:** Unknown
- **ORIGIN AND HISTORY:** Of recent introduction, the production of KRUPUK SUSU was developed as a means to handle surplus milk.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow and buffalo milk

Additives: Starch, salt and shallots

Type: KRUPUK SUSU is a dry product consumed either as a snack or as an appetizer. it has the shape of thin dried slices. Its colour is white and it has a salty taste.

Consistency: Hard

Composition: Unknown.

- **TECHNOLOGY:** The whole fresh milk is heated to boiling point. Meanwhile, starch flour, salt and diced shallots are mixed together and then added little by little to boiled milk. The blend is well homogenized. Then, the paste obtained is pressed and boiled. Once cooled, the mass of paste is cut into thin slices which are subsequently sundried until most of the moisture is removed.

KRUPUK SUSU is packed into plastic bags where it can be stored for up to 90 days.

2.8 - **NAME:** **KULFI**or **MALAI KULFI** **Country: INDIA**

- **AREA OF ORIGIN:** Northeastern area of INDIA
- **AREA OF PRODUCTION:** All over INDIA
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND** CHARACTERISTICS:

Raw material: Cow or buffalo milk

Additives: Sugar

Type: KULFI is an ice cream based on milk. It is frozen in small containers which have generally a conical or a cylindrical shape. It may be flavoured either with chocolate, ground nuts or fruit pulp.

Consistency: Hard

Composition: According to the bureau of Indian standards:

	Plain KULFI	Flavoured KULFI
Dry matter:	35.0%	30%
Milk fat:	8.0%	6%
Proteins:	3.5%	3.5%

Sucrose: 13.0% 12%

- **TECHNOLOGY:** Raw milk is heated to boiling point. Then, sugar is added and the mixture is concentrated to approxima- tely 2:1. When the concentrate has been cooled, MALAI (indigenous cream), crushed nuts and selected flavours are added and then well mixed. This mix is poured into conical or cylindrical moulds of various capacities, made of glavanised iron sheet. The moulds are closed on top by means of a small disc and the edges are air proofed with wheat flour dough. Modern moulds are made of aluminium and their shape is generally conical with screw plastic caps. The mix in the moulds is frozen using a large earthenware vessel containing a 1=1 mixture of ice and salt.

2.9 - **NAME:** **KURCHAN** **Country: PHILIPPINES**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** Northern region of INDIA
- **ORIGIN AND HISTORY:**
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Buffalo milk

Type: KURCHAN is a sweetenend concentrated, whole milk product similar to RABRI. It is used for direct consumption. It has a slightly cooked flavour, which is relished.

Consistency:

Composition: Moisture: 28%
Dry matter: 72%
Fatcontent: 24%

- **TECHNOLOGY:** 3–4 kg of whole raw milk are heated in a shallow pan and allowed to simmer. The milk is not allowed to boil and is not stirred until after the addition of sugar. The absence of stirring helps the formation of a thick creamy layer on the surface of the milk. When the volume of the milk is reduced by evaporation of water to about one-fourth of the original volume of milk, good quality sugar, equal to 5–6 percent of the weight of the original quantity of milk, is added to and dissolved in the mass of concentrated product.

2.10 - **NAME:** **LECHE FLAN** **Country: PHILIPPINES**

- **AREA OF ORIGIN:** PHILIPPINES
- **AREA OF PRODUCTION:** All over the PHILIPPINES
- **ORIGIN AND HISTORY:** Its exact origin is not known. However, this product is very popular all over the PHILIPPINES. It is a speciality served at parties.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Fresh milk
Additives: Condensed milk, egg yolk, vanilla extract, lemon zest and sugar.
Type: LECHE FLAN is a dessert similar to a cream caramel. It is a jelly-like product, homogeneous in texture, which has a sweet taste and that smells like vanilla flavour and lemon rind.

Consistency: Soft
Composition: Unknown.

- **TECHNOLOGY:** One cup of brown sugar is dissolved in 1/4 cup of water and is heated over medium heat until the sugar caramelizes. A suitable size mould is lined with the caramel evenly and it is set aside. Then, 2 cups of fresh milk are heated to the boiling point and cooled to warm temperature. Eight egg yolks and vanilla extract are added to the boiled milk and well mixed. One tin of condensed milk is added to the mixture which is strained through a coarse cheese cloth and poured into the caramel lined mould. The mould is placed in a big pan half filled with water and is baked until the mixture becomes firm. The product is cooked before removing from moulds. In general this product is marketed in the mould covered with a cellophane.
- **REMARKS:** It is usually stored in refrigerator to improve its firmness and protect it from insects. Its shelf life is 3–5 days at room temperature and 2–3 weeks if it is kept in refrigerator.

2.11 - **NAME:** **MALAI** **Country: INDIA**
PAKISTAN

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** Northeastern area of the Indian subcontinent
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow, buffalo, sheep and goat whole milk.

Type: MALAI is the firm skin that forms on cooling boiled milk. It is a mixture of fat and coagulated proteins which has an even appearance. Its colour is white to yellowish and it has a fresh taste.

Consistency: Soft

Composition: Moisture and dry matter are unknown Fat content: 20–30%.

- **TECHNOLOGY:** Whole fresh milk is steadily heated to boiling point. the boiling time is not reported precisely. Then, the milk is removed from the fire and cooled. The thick layer of milk fat and coagulated proteins which form on the surface is collected with a spoon or a laddle and mixed with ghee. Its shelf life is 2–3 days in summer and 4–6 days in winter at room temperature.

- **REMARKS:** This product is mainly made at home and consumed for breakfast. It is also called BALAI in INDIA.

2.12 - **NAME:** **MUKTAGACHAR MONDA** **Country: BANGLADESH**

- **AREA OF ORIGN:** Muktagacha District; Mynensingh, BANGLADESH
- **AREA OF PRODUCTION:** Muktagacha
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Casein obtained from cow milk

Additives: Sugar, cardamon

Type: MUKTAGACHAR MONDA is a delicacy. It is a white to yellowish dried

product with a sweet and spicy taste.

Consistency:

Composition: Moisture: 20–25%

Dry matter: 75–80%

Fat content: 4–6%.

- **TECHNOLOGY:** Whole milk is heated to boiling point and boiling is continued until milk proteins coagulate. Then, milk is removed from the fire and whey is drained off. The precipitate is ground by hand on a wooden tray and cooked. Sugar and spices are added and mixed with the casein. The blend is then cooled at room temperature and packed in plastic bags (199 g to 150 g/packet). its shelf life is 3 to 7 days at room temperature.

- **REMARKS:** This product is usually produced on a small scale.

2.13 - **NAME:** **ÖRÖM** **Country: MONGOLIA**

- **AREA OF ORIGIN:** All over MONGOLIA

- **AREA OF PRODUCTION:** Same as above

- **ORIGIN AND HISTORY:** ÖRÖM is a traditional product consumed by the Mongolian people since time immemorial.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow, sheep and/or goat milk

Type: ÖRÖM is a kind of concentrated product prepared from boiled milk. It has a yellowish colour with an even appearance. Its texture is homogeneous and it has a fresh taste.

Consistency:

Composition: Moisture: 15–25%

Dry matter: 75–85%

Fat content: 67–75%

- **TECHNOLOGY:** Whole raw milk is strained and heated to 90°C. the milk is then removed from the fire, allowed to cool and it is emulsified to obtain a thick foam. The skin which appears during cooling on the surface of milk is collected and forms ÖRÖM. The process of collecting the film is continued until there is no more skin on milk. ÖRÖM can be stored for about 30 days in a cool place.

- **REMARKS:** In 1987, 2 525 tons of ÖRÖM were produced. Its manufacture is subjected to the state standards.

2.14 - **NAME:** **PASTILLAS DE LECHE** **Country: PHILIPPINES**

- **AREA OF ORIGIN:** San Miguel, Bulacan, Tuguegarao, Cagayan and Masbate provinces.

- **AREA OF PRODUCTION:** Tagalog, Region III; Northern Luzon, Region

II.

- **ORIGIN AND HISTORY:** PASTILLAS DE LECHE originated from San Miguel and Bulacan. Its manufacture spread to Cagayan and Masbate provinces. In the beginning, it was home made by farmers rearing carabaos. Then, a small-scale industry developed in the area to produce PASTILLAS DE LECHE.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Carabao and/or cow milk

Additives: Sugar and lemon juice

Type: PASTILLAS DE LECHE is a sweet delicacy. It has the shape of a cylinder (1/2–1 cm diameter and 4 cm long). Its body is yellowish and has a sweet and fruity taste.

Consistency: Firm

Composition: Moisture: 10%

Dry matter: 90%

Fat content: unknown.

- **TECHNOLOGY:** A maximum of 4 litres of milk per batch is heated on a low fire in a shallow stainless steel, china or copper pan under continuous stirring. When about half of the water content is evaporated, refined sugar and lemon juice are added. The milk concentra- tion increases by simmering under continuous stirring so as to avoid scorching. The pan is removed from the fire when the concentrated milk can easily be formed into a ball. Then, the paste is transferred to a shallow tray, flattened using a roller and cut into rectangles 1/2–1 cm wide by 4 cm long. Then, each piece is given a cylindrical shape, wrapped in aluminium foil and overwrapped with cellophane. Its shelf life is 12 to 15 days at room temperature and 2 to 3 weeks under refrigeration.

- **REMARKS:** This product is marketed by retail grocers.

2.15 - **NAME:** **PEDA** **Country: INDIA**

GUNDPAK **NEPAL**

- **AREA OF ORIGIN:** INDIA - NEPAL

- **AREA OF PRODUCTION:** Same as above.

- **AREA OF** The quantity of PEDA produced in INDIA is the most important production

PRODUCTION: of milk based sweet using khoa as the raw material. PEDA is made by “halwais” which are manufac- turers of traditional sweets. Nowadays PEDA still plays an important social role as presents called “Prasad” which are given on religious and social occasions.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Khoa

Additives: Sugar, nuts, flavouring and colouring substances.

Type: PEDA is a sweet delicacy prepared from khoa and sugar. It has usually the shape of small spheres weighing 15 to 20 g. Its colour is whitish to yellow and it has a coarse, grainy texture.

Consistency: Firm

Composition: Unknown.

- **TECHNOLOGY:** Khoa and sugar are mixed in the ratio of 3:1. The khoa and sugar mixture is warmed and mixed in a pan on a gentle fire until firm balls are formed. The pan is removed from the fire; nuts and flavouring materials are added, if desired. Some traders use permitted colours to obtain PEDA of different colours and in particular saffron to obtain KESAR PEDA, one of the preferred types of PEDA. The contents are mixed throroughly and made into balls of 15–20 g size by rolling them between the palms of the hands after having rubbed the hands with little ghee. The product may also be formed into different shapes and sizes using different dies and moulds. PEDA is usually packed in paperboard cartons with a parchment paper or greaseproof paper.

- **REMARKS:** A similar product called GUNPAK is very popular in NEPAL.

2.16 - **NAME:** **RABRI** **Country: INDIA**

TAR **NEPAL**

- **AREA OF ORIGIN:** Northeastern part of the Indian subcontinent
- **AREA OF PRODUCTION:** Northern and eastern regions of INDIA. All over NEPAL
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow or buffalo milk

Type: RABRI is a concentrated and sweetened whole milk product containing several layers of clotted cream.

Consistency: Semi-hard

Composition: Moisture: 30%

Dry matter: 70%

Lactose: 17%

Protein: 10%

Ash: 3%

Cane sugar: 20%

- **TECHNOLOGY:** 3 to 4 kg of milk are heated in a fairly shallow pan over an open fire and are allowed to simmer. The milk is neither stirred nor allowed to boil. The surface of the milk may be gently fanned to help the process of skin formation. A portion of this skin, about 3–4 sq cm, is continuously broken

with a thick wooden stick (or bamboo/cane splints) and pushed to the side of the pan which is cooler and where the skin dries up. A flat-edged scraper known as a “panyo” is used in NEPAL. This operation requires considerable skill and constant attention. The preparation time is about 25–40 minutes depending on the rate of boiling. As the slow evaporation reduces the milk to about 1/5–1/8th of its original volume, good quality ground sugar (5–6 percent by weight of the original milk) is added to the milk concentrate and dissolved in it. The layers of skin collected on the sides of the pan are then immersed in the mixture and the final product is obtained by heating the whole mass for another brief period. The finished product consists of non-homogeneous skin flakes partly covered by and partly floating in sweetened condensed milk. By heating the concentrate slightly at the end, a more homogeneous chewy texture mass is obtained. The product can be packed and sold in any of the modern types of containers.

2.17 - **NAME:** **RASOGOLLA** **Country: INDIA**

- **AREA OF ORIGIN:** Calcutta
- **AREA OF PRODUCTION:** All over INDIA
- **ORIGIN AND HISTORY:** This sweet delicacy is of recent origin. It was developed in 1868 by an enterprising Calcutta sweetmeat maker: Nabin Chandra Das.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Fresh and soft Chhanna

Additives: Wheat flour or semolina, sugar

Type: RASOGOLLA is a sweet delicacy stored and served in sugar syrup. It is given the shape of small spheres, 30 mm of diameter, with a typical spongy body and smooth texture.

Consistency: Spongy

Composition: Moisture: 55%

Dry matter: 45%

Milk fat: 5%

Sucrose: 45%

Protein: 5%

- **TECHNOLOGY:** The traditional RASOGOLLA manufacturing method includes 4 steps:

- Production of the RASOGOLLA balls
- preparation of the cooking medium
- cooking of the RASOGOLLA balls
- preserving the RASOGOLLA balls in sugar syrup.

- **Production of the RASOGOLLA balls**

Freshly made Chhanna is put in a muslin cloth and is squeezed by hand to remove as much whey as possible. Wheat flour and/or semolina is added to Chhanna at the rate of 1 to 4% of the amount of cheese processed. The two ingredients are mixed in a container and kneaded thoroughly by hand to make an homogeneous paste which is aportioned and formed into balls of about 15 mm diameter with a smooth surface and no cracks (1 kg of Chhanna yields 90–100 RASOGOLLAS).

- **Preparation of of the cooking blend**

It can be either sweet or plain according to the type of milk processed - sweet cooking mixture is usually preferred to prepare RASOGOLLA made

from cow milk whereas plain cooking stuff is used to cook the other types of RASOGOLLA:

Sugar syrup

Three parts of sugar are mixed with 1 part of whey and 3 parts of water in the case of Chhanna obtained from buffalo milk whereas only 2 parts of water are necessary for Chhanna prepared from cow milk. The pH is adjusted to about 6.8 with calcium oxide. The solution is boiled and the scum which forms at the top is scooped off before the preparation is used for cooking.

Plain cooking blend

Three parts of fresh Chhanna are mixed with 1 part of water. The pH is adjusted at the same level as that of sugar syrup. The precipitated calcium lactate is removed and only the clear supernatant solution is used for cooking.

- **Cooking of the RASOGOLLA Balls**

Raw RASOGOLLA balls are dipped in the heated cooking liquid which is so regulated that it forms a stable foam. The concentration and pH are kept constant during all the cooking time. Once the spheres are properly cooked, they are transferred in water at 30–35°C for 5–10 minutes to stabilize their colour and texture. About 10% of the cooking solution is replaced by some fresh one every time it is to be used again to cook another batch of RASOGOLLA.

- **Preserving in sugar syrup**

The desired sugar syrup concentration in the final product is 45–50 percent. This is achieved by dipping the textured-stabilized balls first in 35–40 percent sugar syrup. The product finally acquires the desired sugar

concentration after a balance between the sugar syrup inside and outside the spheres is reached. The sugar syrup is prepared by mixing sugar in the required amount to boiling water adjusted to pH 6.0 by means of fermented whey and lactic acid. One percent of skim milk is added to the boiling syrup and boiling is continued for about 5 minutes. The scum collected at the top is skimmed off and the syrup is filtered through a filter press and quickly cooled to room temperature. The pH of the sugar syrup should not exceed 7.0. RASOGOLLAS are stored at or below 10°C. In order to obtain a more precise sugar concentration in the final product, it is possible to use three different sugar syrups with an increasing concentration instead of two. Chhanna obtained from milk coagulated by means of lactic acid is preferred for RASOGOLLA whereas Chhanna obtained with citric acid is usually preferred for Sandesh manufacture.

2.18 - **NAME:** **SHRIKHAND** **Country: INDIA**

SIKARNI **NEPAL**

- **AREA OF ORIGIN:** Northeastern area of the Indian subcontinent
- **AREA OF PRODUCTION:** Northeastern area of INDIA and all over NEPAL
- **ORIGIN AND HISTORY:** Unknown but ancient origin as the name derives from sanskrit.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Dahi

Additives: Sugar, spices

Type: SHRIKHAND is a semi-soft whole milk product made from concentrated

lactic fermented curd. It is a white to yellowish product with a grainy texture. It has an acid, fruity and spicy taste.

Consistency: Semi-fluid

Composition: Moisture: 40 to 45%

Dry matter: 55 to 60%

Fat content: 5% FDM

Sucrose: 40 to 42%

Protein: 7 to 8%

Lactose: 8 to 9%

Ash: 0.45 to 0.55%

- **TECHNOLOGY:** The fermented milk called Dahi is broken and placed into a muslin bag. This latter is hung to drain off whey for 10–12 hours. During this period, the curd is intermittently squeezed to facilitate drainage. The solid mass which is obtained, called chakka or maska, is mixed with the required amount of sugar (on average 50–100% of curd quantity) and spices to produce SHRIKHAND.

- **REMARKS:** SIKARNI is mainly produced for home consumption in NEPAL whereas in INDIA SHRIKHAND is either produced at home or produced by dairy factories. In this case, whey is removed from Dahi by centrifugation and chakka is mixed with sugar in a planetary mixer. Usually, this SHRIKHAND is pasteurized on a scraped surface heat exchanger. The shelf life of pasteurized SHRIKHAND is 3–6 months. In a process developed by the National Dairy Development Board, SHRIKHAND is packed into performed cups on a form-fill-seal machine.

SHRIKHAND VADI is a derived product from SHRIKHAND. It is obtained

by further concentration of SHRIKHAND as prepared above by heating in an open pan over a direct fire until it forms a hard mass. SHRIKHAND VADI has the following composition:

Moisture: 5 to 6%

Fat: 7 to 8%

Protein: 8 to 10%

Lactose: 15 to 17%

Sugar: 63 to 65%

Ash: 0.75 to 0.8%

Lactic acid: 1.0 to 1.2%

2.19 - **NAME:** **YEMA Country: PHILIPPINES**

- **AREA OF ORIGIN:** Bulacan, Laguna, Rizal, Panpanga
- **AREA OF PRODUCTION:**: Bulacan Laguna, Rizal, Pampanga, nueva Ecija, Cagayan, Baguio City.
- **ORIGIN AND HISTORY:** This product has been developed by rural people to lengthen the shelf life of Pastillas de Leche.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Carabao and/or cow milk

Additives: Egg yolk, water, sugar and vanilla extract.

Type: YEMA is a sweet delicacy which has a brownish colour, a sweet and vanilla flavour and a lumpy texture. it has the shape of small spheres coated with dark syrup.

Consistency: Firm

Composition: Unknown.

- **TECHNOLOGY:** Raw milk is poured into a copper sauce pan (tacho) and is simmered under continuously stirring until it becomes thick and is reduced to about 1/4 of its original volume. Then, it is removed from the fire and slightly cooked. Some of the concentrated milk is mixed with a lightly beaten egg yolk and this blend is then added to the rest of milk under continuous stirring. Vanilla is added and the mix is simmered and stirred until it becomes thick enough to be given the shape of small spheres. After it has been removed from the fire and cooled, these spheres are dipped into a thick syrup. The syrup is prepared by dissolving slowly one part of sugar in one part of water. This mix is heated and scum is removed as soon as it reaches the boiling point. Boiling is maintained until the syrup reaches the stage when it makes hanging drops. Then syrup is ready for coating the YEMA balls. The candies are wrapped in multi- coloured cellophane and stored in tightly covered containers like cans, canister or jars. their shelf life is 1 to 2 months at room temperature.

3. LATIN AMERICA

3.1 - **NAME:** **CAJETA (MEXICO)** **Country: ALL OVER LATIN**

DULCE DE LECHE AMERICA

MANJAR BLANCO

MANJAR DE LECHE

- **AREA OF ORIGIN:** Unknown, either Spain or Latin America
- **ORIGIN AND HISTORY:** This product, very popular all over Latin America, was probably developed during the colonial period.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material:	Whole or partly-skimmed cow or goat milk
Additives:	Sugar, bicarbonate, potassium sorbate
Type:	DULCE DE LECHE can be defined as a milk jam. It has a brilliant brown to yellowish colour with a very sweet milk taste. Its texture is lumpy to jelly like.
Consistency:	Thick
Composition:	Moisture: 30 to 35%
	Dry matter: 65 to 70%
	Fat content: 6 to 8%

- **TECHNOLOGY:** Sugar is added to the pasteurized milk. Some sodium bicarbonate is added to neutralize the mix which is then heated to the boiling point under continuous agitation. Once the volume of the mix is reduced to one-half of its original volume, in general after 2 hours, the milk jam is removed from the fire and cooled down to 50–55°C before packing in plastic glasses or polyethylene bags. Its shelf life is about 30 days.
- **REMARKS:** Its manufacturing method is similar all over Latin America. However, some differences exist according to the country where it is made. Thus, in Bolivia, some rice flour, coconut and almonds are added to the milk jam. A little bit of sorbate is added in some areas in order to control mould growth. This product is produced both by small workshops as well as by industrial dairies.

3.2 - **NAME:** **CHONGOS ZAMORANOS** **Country: MEXICO**

- **AREA OF ORIGIN:** Northeastern Michoacan State (Zamora)

- **AREA OF PRODUCTION**: Northeastern Michoacan, Southeastern Jalisco State
- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Half-skimmed milk of goat and cow

Additives: Sugar or sugar syrup and cinnamon

Type: CHONGOS ZAMORANOS may be considered as a milk jam. It looks like a baked custard with a yellowish to brown coffee colour. It has a milky sweet taste.

Consistency: Gelatinous and coagulated

Composition: Moisture: 52 to 55%

Dry matter: 45 to 48%

Fat content: 4%

- **TECHNOLOGY:** The first steps up to salting are similar to PANELA technology (described on page 191). This cheese is a fresh unripened cheese used as raw material for CHONGOS ZAMORANOS preparation. It is cut in regular pieces, well drained and cooked in sugar syrup with cinnamon at 60°C for 30 to 40 minutes without stirring it until it takes a custard consistency and a light coffee colour. Then, this mix is poured either into glass jars or vacuum packed into tin cans. In this case it can be kept for about 180 days at room temperature.

3.3 - **NAME:** **COLA DE MONO** **Country: CHILE**

- **AREA OF ORIGIN:** CHILE
- **AREA OF PRODUCTION:** CHILE
- **ORIGIN AND HISTORY:** COLA DE MONO is a traditional Chilean alcoholic beverage prepared only for very particular celebrations such as Christmas and Chilean National days.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow milk

Additives: Agua ardiente (an alcoholic drink), sugar and coffee.

Type: COLA DE MONO is a slightly alcoholic beverage consumed as a cold drink. It has a very clear brown colour and a pleasant taste and flavour.

Consistency: Liquid

Composition: Alcohol 6%

- **TECHNOLOGY:** Whole or partly skimmed milk is mixed with agua ardiente, sugar and some coffee.
- **REMARKS:** This product is only made at household scale and usually consumed as a cold drink with Christmas cake or with special biscuits on traditional parties such as Chilean National days.

3.4 - **NAME:** **JAMONCILLO** **Country: MEXICO**

- **AREA OF ORIGIN:** Puebla
- **AREA OF PRODUCTION:** All over MEXICO

- **ORIGIN AND HISTORY:** JAMONCILLO was developed by the missionaries when they settled in Puebla.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Whole cow milk

Additives: Sugar, peeled pumpkin seed flour, artificial colouring (up to 0.1%).

Type: JAMONCILLO is a white thick product which can be classified as a sweet concentrated milk. It has an even appearance and an homogeneous texture. It has a sweet milk taste.

Consistency: Firm

Composition: Moisture: 15%

Dry matter: 85%

Fat content: 6%

- **TECHNOLOGY:** Raw milk is strained and heated to 60°C for 30 minutes. Then, sugar, peeled pumpkin seed flour and milk are put into a copper kettle and are heated to 60°C for 40 minutes. This mix is cooled and packed into cellophane paper. The colouring agent is usually added during heating.
- **REMARKS:** The manufacture of this product is subject to the general Regulation on Health.

3.5 - **NAME:** **PENUS** **Country: GUYANA**

- **AREA OF ORIGIN:** Unknown
- **AREA OF PRODUCTION:** All over GUYANA

- **ORIGIN AND HISTORY:** Unknown
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Colostrum

Additives: Sugar, cloves, ginger, orange peel.

Type: PENUS is a thick brownish product which has a spicy taste and a lumpy texture. It is obtained by heat coagulation of colostrum.

Consistency: Thick

Composition: Unknown

- **TECHNOLOGY:** Sugar and different sorts of spices are added to the fresh colostrum which is heated to the boiling point until its colour becomes brownish and proteins coagulate.
- **REMARKS:** This product is only prepared at home level by small- holders when the amount of colostrum available is in excess of the needs of the newborn calf.

4. NEAR EAST

4.1 - **NAME:** **AYRAN** **Country: TURKEY**

- **AREA OF ORIGIN:** Anatolia
- **AREA OF PRODUCTION:** Anatolia
- **ORIGIN AND HISTORY:** Unknown

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Yoghurt from cow or sheep milk

Type: AYRAN is a soft drink made from yoghurt. It is a liquid product which has a white colour, an homogeneous texture and a sour and salty taste.

Consistency: Liquid

Composition: Moisture: 94%

Dry matter: 6%

Fat content: 1.5%

- **TECHNOLOGY:** Once the yoghurt has been prepared, it is diluted with water, salt is added and well mixed. Then the drink is cooled and poured into tetrabrick cups or in glass bottles where it is stored at 4°C. Its shelf life is about 15 days in glass bottles and 30 days in tetra bricks.

- **REMARKS:** 4 600 000 1 of AYRAN were produced in 1986. Its manufacture is subject to the National Food and Food Additives Regulation.

4.2 - **NAME:**

HOGUT	**Country: QATAR**
KISH/KUSHK	**LEBANON**
	EGYPT
KESHKEH	**SYRIA**

- **AREA OF ORIGIN:** Bekaa Valley and Mount Lebanon in LEBANON, Upper EGYPT and SYRIA.

- **AREA OF PRODUCTION:** All over the Near East

- **ORIGIN AND** The origin of KISHK is unknown; however, this product is traditionally

HISTORY: consumed all over the Near East. For centuries, it has been prepared during the month of September and then consumed all over the year.

- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Cow, sheep and/or goat milk and ground wheat.

Type: KISHK is a dried powder made from acidified milk mixed with ground wheat and then sundried. It is yellowish and has an acid and yeast fermented taste. KISHK taste is special when it is made from goat milk.

Consistency: Powder

Composition: Moisture: 10 to 15%

Dry matter: 85 to 90%

Fat content: 8 to 10%

- **TECHNOLOGY:** First, 5 kg of hard wheat are half boiled, cooled and subsequently ground in pieces of a size of 2 to 4 mm. This product, called Bourghol, is a staple food for Lebanese people. Meanwhile, 10 kg of milk are heated to 70°C for 30 minutes. The Bourghol is added to the milk in an earthenware jar which is covered and the mix is allowed to settle for 24 hours at room temperature. The next day, 2 to 2.5 kg of Laban previously prepared is added to the mixture and mixed by hand. Once more, the mix is left to ferment for 24 hours. After three days, the whole mix turns into a white pale paste. This mixture is spread in a thin layer and is sundried for about half a day. When the product is well dry, it is ground and packed in cloth bags. It can be kept for one year.

- **REMARKS:** About 1 000 tons of KISHK are produced in LEBANON per year and sold through retail shops. KISHK constitutes a well-balanced dish which is very

popular amongst the Lebanese population. Mixed with water (1 to 5), salt, garlic, Kawarma (dried meat) and then boiled, it was consumed like a pleasant hot soup. However, this dish is becoming rare in Lebanese diet.

4.3 - **NAME:** **KANAFEH BIL JIBN** **Country: LEBANON**

- **AREA OF ORIGIN:** Unknown, likely all over the country
- **AREA OF PRODUCTION:** The exact origin of this product is unknown. However, it is a very popular dish for breakfast all over LEBANON, SYRIA and PALESTINE.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Akawieh cheese

Additives: Sugar, flower water, ground biscuits, ghee.

Type: KANAFEH BIL JIBN is one of the three most popular dishes consumed for breakfast in LEBANON. It is made from fresh cheese and ground biscuits cooked in ghee and has the consistency of paste.

Consistency: Firm

Composition: Unknown.

- **TECHNOLOGY:** Salt is first removed from cheese by soaking it in fresh water overnight. Ground biscuits are roasted in a pan with ghee. Then, the fresh cheese and some sugar are added and the mix is cooked for 20 minutes. Once cooked, the paste is covered with ground biscuits and flavouring substances are added. Its shelf life is 2–3 days at room tempeature in a carton box.
- **REMARKS:** KANAFEH BIL JIBN is consumed with a special type of bread which has the form of a crescent.

4.4 - **NAME:** **SHENGLISH or SORKE** **Country: SYRIA**

- **AREA OF ORIGIN:** Central area of SYRIA
- **AREA OF PRODUCTION:** All over SYRIA
- **ORIGIN AND HISTORY:** Its origin is not known exactly, probably it originated from the central part of SYRIA.
- **DESCRIPTION AND CHARACTERISTICS:**

Raw material: Sheep, goat and/or cow milk

Additives: Thyme, cumin seed, chilly powder, pepper and salt.

Type: It is a spiced, ripened labne (drained acidified milk). It has a spherical shape and a brownish to green colour. Its taste is very sour and spicy.

Consistency: Firm

Composition: Moisture: 40 to 50%

Dry matter: 50 to 60%

Fat content: 13 to 18%.

- **TECHNOLOGY:** The drained laban or labne is mixed with spices and is given the form of small spheres. It is then ripened for 7–8 days in open air and then stored either in straw baskets in a cool place or in olive oil. Accordingly, its shelf life is about 30 or 100 days.
- **REMARKS:** SHENGLISH is only produced on a small scale.

4.5 - **NAME:** **TRACHANAS Country: CYPRUS**

- **AREA OF ORIGIN:** CYPRUS

- **AREA OF PRODUCTION:** All over CYPRUS
- **ORIGIN AND HISTORY:** Unknown.
- **DESCRIPTION AND CHARCTERISTICS:**

Raw material: Sour milk from goat milk or from a mixture of sheep and goat milk, ground wheat.

Type: It has a yellowish colour and a sour milk sour taste.

Consistency: Hard

Composition: Moisture: 10 to 15%

Dry matter: 85 to 90%

Fat content: 8 to 10%

- **TECHNOLOGY:** Goat milk or a mixture of goat and sheep milk is allowed to acidify for several days either spontaneously or by adding a culture of yoghurt. It is stirred every day until it reaches the desired acidity. Then sour milk is heated and some ground wheat and salt are added gradually and are mixed to the hot sour milk to obtain a thick mass. The mix then is heated to the boiling point. One it begins to boil, the paste is removed from the fire and allowed to cool down. It is cut in finger sized pieces and subsequently sundried. When it is dry enough, it is stored in a cool place.
- **REMARKS:** TRACHANAS is only produced during summer and is used to prepare a hot soup consumed during winter.