MILK AND MILK PRODUCTS

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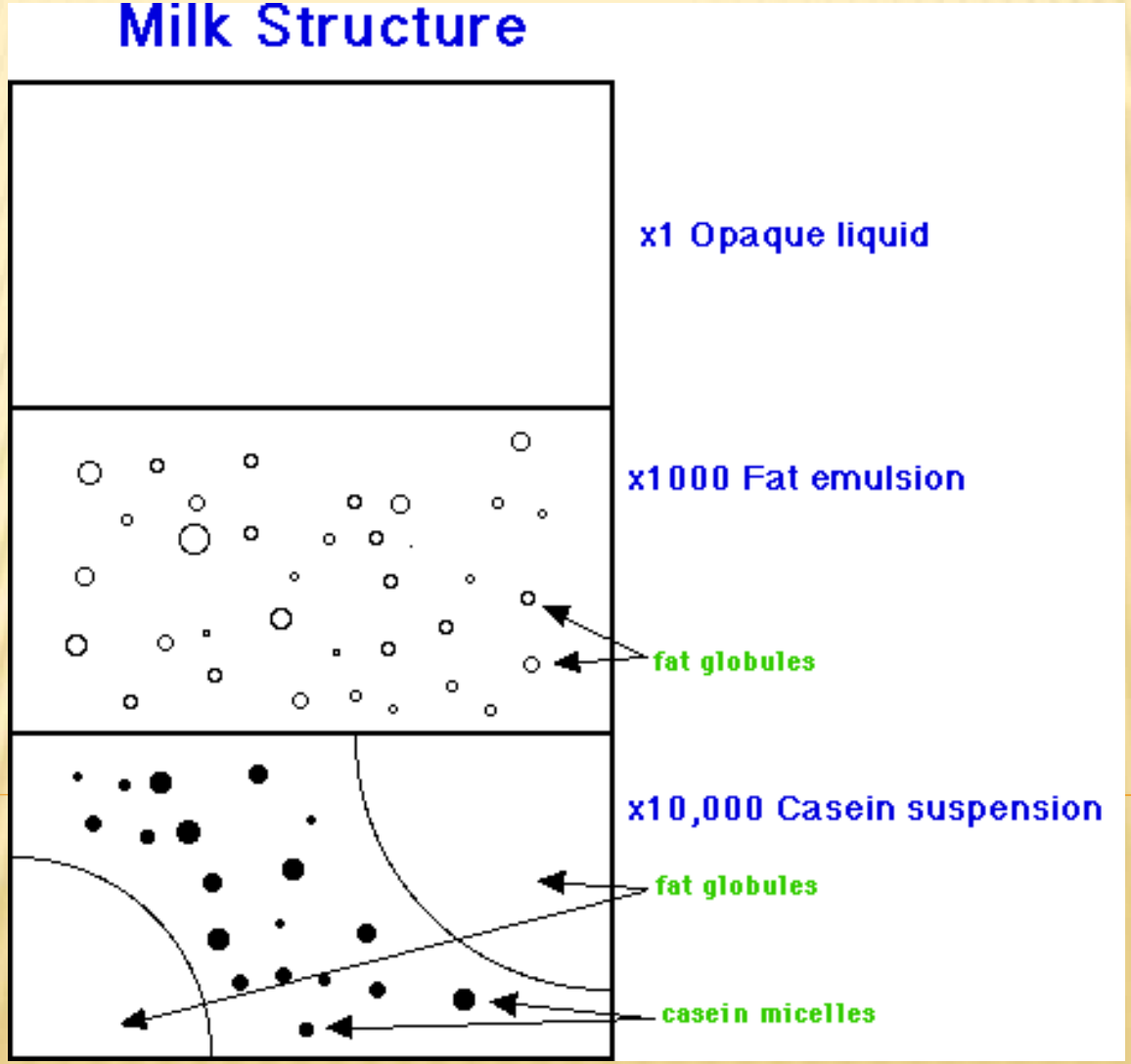
Milk is commonly considered as complete food because it contains all six of essential foodstuffs. Milk protein is one of excellent quality and it promotes growth and maintenance of body tissues. Therefore, milk is an essential food for infants and children. But milk is very low in iron and absorbic acid contents.

Calcium and phosphorus levels in milk are very high. The ratio of calcium and phosphorus and the presence of vitamin A helps its maximum utilisation. Milk is an excellent source of vitamin A. In it, the cream is rich in vitamin a and if the same is removed as in skimmed milk, its vitamin A content becomes low. Riboflavin, a B vitamin is present in significant quantities in milk. If the milk is exposed to light, riboflavin is lost. Milk protein is casein.

STRUCTURE OF MILK



COMPOSITION OF MILK

Milk product	Protein (gm)	Fat (gm)	Calcium (mg)	Vitamin A (I.U.)	Carbs (gm)	Calories (kcal)
Buffalo's milk	4.3	6.5	210	160	5.0	117
Cow's milk	3.2	4.1	120	174	4.4	67
Khoa	14.6	31.2	650	497	20.5	421
Skimmed milk	38	0.1	1370	0	51	357
Whole milk powder	25.8	26.7	950	1400	38	496
Cheese	24.1	25.1	790	273	6.3	348
Human milk	1.1	3.4	28	137	7.4	65
Curd	3.1	4.0	149	102	3.0	60

CLASSIFICATION OF MILK

Milk is classified into following types:

- **SKIM MILK:** Fat content is reduced to 0.5-2% by centrifugation. By removing fat from the milk not only taste or flavour is reduced but fat soluble vitamins like vitamin A and D are reduced. Usually this milk is fortified with vitamins A and D. It is used for low calorie diets.
- **EVAPORATED MILK:** This is the milk from which about 50-60% of the water has been evaporated. Raw milk is clarified and concentrated in a vacuum pan at temperature of 74-77 degree C. It is fortified with vitamin D, homogenised, sterilised cans at a temperature of 118 degree C for 15 minutes and cooled.

- **SWEETENED CONDENSED MILK:** It is not sterile. Multiplication of micro-organisms in the product is prevented by the preservation action of sugar. The product is made from pasteurised milk that is concentrated and sweetened with sucrose. sugar concentration is 65%.
- **DRY MILK:** Dry milk can be made with whole or skimmed milk. Milk powder can be dehydrated to about 97% by spray drying and vacuum drying. Good shelf life without refrigeration of dry milk makes it a valuable milk product. It can be reconstituted into fluid milk. It can be stored for only six months because of propensity of fat to oxidise.
- **STANDARDISED MILK:** In standardised milk, the fat content is maintained at 4.5% and S.N.F. At 8.5%. It is prepared from the mixture of buffalo milk and skim milk.

- **TONED MILK:** It is prepared by mixing reconstituted from skim milk powder with buffalo milk containing 7% fat. The fat content of the toned milk should not be less than 3% and S.N.F. 8.5%.
- **DOUBLE TONED MILK:** This is prepared by admixture of cow's or buffalo's milk or both with fresh skimmed milk or by admixture with skim milk reconstituted from skim milk powder or by partial removal or addition of milk to skim milk.
- **RECOMBINED MILK:** It is a homogenised product prepared from milk fat, non-milk fat solids and water. It should be pasteurised and show a negative phosphotase test. Its fat content should be less than 3% and S.N.F. 8.5%.

SELECTION OF MILK AND MILK PRODUCTS

- Look at the date – most milk can be used safely up to 5 days past “sell by” date; yoghurt and some ripened cheese can be kept for longer periods of time, be sure containers sealed tightly.
- Examine cartons and avoid any with leaks or tears in the packaging; be sure the products are cold.
- Choose milk that is in cartons or opaque bottles rather than clear glass whenever possible. Vitamin B12 (riboflavin) breaks down easily when exposed to light.
- Make the dairy aisle your last stop, to ensure your dairy products won’t warm up while you shop.

STORAGE OF MILK AND MILK PRODUCTS

IN THE FRIDGE

- Place your dairy items in the fridge immediately after arriving home.
- Store dairy food and milk on an interior shelf of your fridge, rather than the door because interior temperature remains more consistent than the door.
- Store blocks of cheese in the original wrapping until used.
- Discard yoghurt, sour cream, cottage cheese and similar dairy products if mold appears.

IN THE FREEZER

- Freeze milk in a plastic container. Liquids expand when they're frozen so it's important to leave extra room to allow for this expansion. Otherwise, container may burst from the built-up pressure.
- Freeze soft, shredded cheese in a re-sealable freezer bag. Defrost in the fridge, or add frozen to dishes, such as casseroles, before baking.

ANTI-NUTRITIONAL FACTORS IN MILK

Some anti-nutritional factors present in milk are:

- ✓ Protease
- ✓ Tannins
- ✓ Phytates
- ✓ Trypsin inhibitors
- ✓ Oligosaccharides

USES IN COOKERY

- It contributes to the nutritive value of the diet, e.g., milk shakes, plain milk, flavoured milk, cheese toast.
- Milk adds taste and flavour to the product, e.g., payasam, tea, coffee.
- It acts as thickening agent along with starch, e.g., white sauce or cream soups.
- Milk is also used in desserts, e.g., ice cream, pudding.
- Curd or buttermilk is used as a leavening agent and to improve the texture, e.g., dhokla, bhatura.
- Curd is used as a marinating agent, e.g., marinating chicken and meat.