

THE NEARLY PERFECT FOOD

Milk is a white, opaque liquid secreted by female mammals to nourish their newly born offspring. Milk is an especially valuable food because it is meant to be the sole sustaining food of the animal during its early life. Nearly all milks contain the same substances – water, proteins, fat, milk sugar, or lactose, various vitamins and minerals – but the relative proportions of these substances vary greatly from species to species.

Human milk is more easily digested than cow's milk both because there is less protein in it, and because less of that protein curdles in stomach acid. Homogenization, pasteurization, and cooking all cause milk proteins to form weaker, looser curds, and so improve the digestibility of cow's milk.

Human milk alone contains the so-called 'bifidus factor', a substance that promotes the growth of *Lactobacillus bifidus*, a harmless bacterium which excretes as a waste product lactic acid, which in turn helps to inhibit the growth of harmful microbes.

The milk sugar lactose – which is found in no other food – is a disaccharide. Each lactose molecule consists of one glucose and one galactose unit joined together. All multiunit sugars must be broken down into their components by digestive enzymes in the small intestine before they can be absorbed and used by the body. The lactose-breaking enzyme is lactase.

Both physically and chemically, milk is a complex material.

Globules of milk fat, complexes of protein

and salts, dissolved sugar, vitamins and salts all swim in the water that accounts for the bulk of the fluid. The fat and proteins are by far the most important components.

Milk fat carries the fat soluble vitamins, essential fatty acids, and about half the calories; it contributes to milk's characteristic taste and texture, and the higher the milk fat content, the more butter or cream can be made from the milk.

There are a great many different kinds of proteins floating around in milk but we can reduce the protein population to two basic groups: curds and whey. The two are distinguished by their reactions to acid and rennin, an enzyme used to make cheese. The curd protein, casein, coagulates and forms solid clumps, while the whey proteins remain suspended in the liquid.

All of the recognized vitamins are present in milk, though some, such as vitamin C, come only in tiny quantities. Vitamin A and its chemical precursor carotene are carried in the fat globules and give milk and butter a yellowish cast; riboflavin, which has a greenish colour, can sometimes be seen in skim milk or in the whey that separates during cheese making.

A wide range of salts is found in milk, with sodium, potassium, calcium, magnesium, chloride, phosphate, sulphate, citrate, and bicarbonate ions among the more populous. Milk is also highly acidic, with a pH between 6.5 and 6.7.

(from: McGee, *On Food and Cooking*, Unwin Hyman)

1 Ask questions to which the sentences underlined in *The nearly perfect food* are the answers.

2 Choose synonyms (among A words) and antonyms (among B words) of the adjectives below from *The nearly perfect food*. Tip: copy the adjectives in your indexed book.

A: broad, composite, delicate, great, hard, initial, innocuous, little, main, milky, precious, similar

B: big, different, harmful, late, low, narrow, simple, soft, strong, transparent, trivial, worthless

- a. opaque:
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- b. valuable:
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- c. early:
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- d. same:
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- e. weak:
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- f. harmless:
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- g. small/tiny:
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- h. complex:
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- i. important:
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- j. high:
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- k. solid:
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- l. wide:
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3 Write comparative sentences using the suggested elements.

- a. Cow's milk / human milk / rich in proteins and minerals.
- b. Homogenized milk / raw milk / digestible.
- c. Fat and proteins / vitamins / important components of milk.
- d. Vitamin C / vitamin A / abundant in milk.
- e. Water / milk / acidic