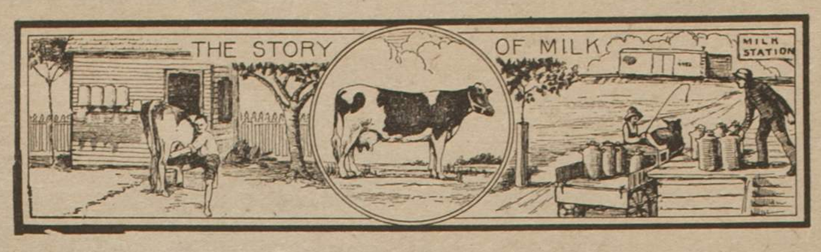
(MOTHER'S) MILK IS A NATURAL!

by Marcy Mauler



Human milk is species specific; it was designed to meet the needs of the human infant. It is in effect a source of biological information which carries on those processes started in the placenta and completed with weaning and the total independence of the growing young.

The requirements of different species are different. For example, whale milk is higher than most milks in fat and calories, important elements for animals living in cold water. Rabbit milk is particularly rich in protein, which is needed for the very rapid growth of young rabbits. Cow's milk is basically formulated by nature for a rapidly growing and maturing organism who must stand on its own feet in one day and quickly mature to independence. A calf doubles its birth weight in one-third the time a human baby does. In contrast, the human baby is an organism in whom maturation takes place over years rather than months, and in whom somatic (physical) growth must take second place to brain growth in the early weeks and years.

Dr. Derrick B. Jelliffe notes that "the constituents of human milk and cow's milk are dissimilar in almost all respects, with the exception of water and lactose." Both do contain four basic ingredients - water, fat, milk proteins, and milk sugars - but differ in kinds, amounts, and proportion.

Cow's milk contains three times as much protein as human breast milk. It is also of a different kind which forms tough curds in the stomach making it harder for the infant to digest them. Human milk proteins form softer curds, easier to digest and used with nearly 100% efficiency. The baby on formula excretes nearly 50% of the protein and this places a strain on his immature system.

Some amino acids (the components of protein) are essential for the infant, in contrast to the adult. Recent data indicate that, while cystine is essential for somatic growth and taurine for brain growth and maturation, neither can be synthesized by the infant body. "Human milk is a rich source of both cystine and taurine. In fact, taurine is one of the most abundant amino acids in human milk - perhaps a reflection of the needs of the rapidly growing human brain. Cystine and taurine are almost non-existent in cow's milk and are extremely low in the blood of infants fed cow's milk." (R.A. Guthrie M.D. and Jan Riordan R.N. - Wichita)

Water is the common ingredient. It should be mentioned that the breastfed human infant receives all necessary water from human milk while his formula fed counterpart needs extra water to help his kidneys eliminate unusable proteins and mineral salts.

Fat is a source of energy provided by both milks. Cow's milk contains twice as much saturated as unsaturated fat while human milk has almost equal parts. One effect of the structure of fat in cow's milk is to cause a loss of calcium in the intestine of the infant fed such milk. From the point of view of the digestion of fat, human milk is almost self-digesting; an enzyme present in breast milk makes it easy on the baby.

Human milk contains twice as much sugar, largely in the form of lactose. This milk sugar is easier to digest, it helps the infant to utilize proteins and is believed to help in the absorption of calcium.

Besides the differences in these four ingredients, the vitamin and mineral content differs in the two milks. The essential vitamin content of human milk generally ranges from two to ten times the amount found in cow's milk, varying with maternal diet. Sterilization of formula reduces the vitamin level further, since many vitamins are destroyed by heat. There is very little Vitamin C in cow's milk, since calves can manufacture their own, while the human infant receives this vitamin from his mother's milk. Fat-soluble vitamins A and E and water-soluble B complex vitamins are in sufficient supply in human mother's milk. Vitamin D, a fat-soluble vitamin, is readily synthesized by the body on exposure to sunlight. What little there was in human milk was formerly measured only in the fat content. Recently, however, a water-soluble variant of this vitamin has been discovered in breast milk; human milk contains far more vitamin D than was hitherto supposed.

The mineral content of human milk is lower than that found in bovine milk; this means less excess load for the immature kidneys to excrete. The calcium content is one-fourth that of cow's milk.

Formula fed children tend to have larger, heavier skeletons as a result of the extra calcium. Human milk also contains a more favorable calcium to phosphorus ratio than do infant formulas. Flouride is low in human milk and supplementation is not recommended by the American Academy of Pediatrics because of this low level. Iron content is sometimes controversial. The human baby is born with a good store of iron, especially so if the cord blood (with its iron-rich red blood cells) is allowed to drain into the baby before the cord is cut. Then too, a recent study indicated that the iron in breast milk is sufficient to meet the requirements of the exclusively breastfed infant until he triples his birth weight. Also, lactoferrin, an iron-binding protein found in breast milk, plays a role in the prevention of iron-deficiency anemia in the breast fed baby.

Only some of the various differences in the milks of the two mammals, cow and human, have been mentioned; furthermore many remain undiscovered. It might also be noted that the milk of human mothers differs according to maternal diet, perhaps differs to meet each baby's own needs, and also changes over time. Colostrum, the first liquid consumed by the human baby, has five to six times more protein than true milk, and has half the fat and carbohydrate. Dr. Robert Jackson (pediatrician, Columbia, Mo.) has pointed out that the proportions of the constituents in human milk gradually change; the colostrum of the first day is not the same as the colostrum of the second, and then when you get into transitional milk there is a gradual consistent change intimately related to the needs of the baby. He says that no matter how much artificial formulas are improved, it's never going to be possible to manufacture formulas for the first day, the second day, the third day, and so on that makes the kind of sense the milk of the baby's own mother does.

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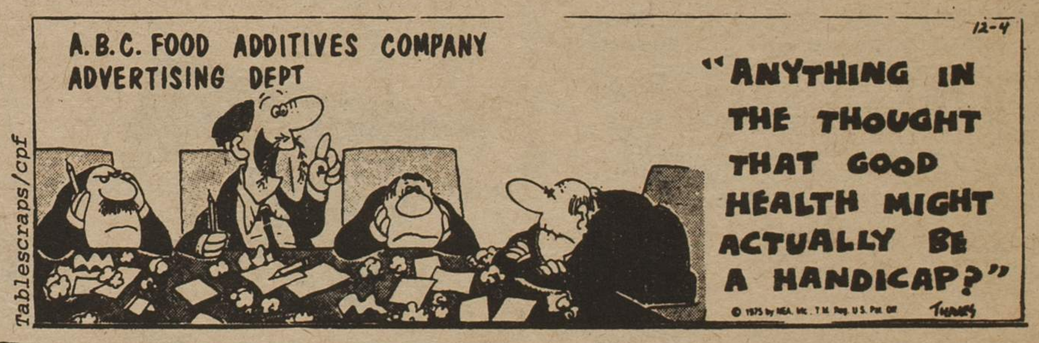

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