HUMAN MILK
THE TRUE WHITE GOLD

Not only does human breastmilk provide essential nourishment for the infant, but the skin-to-skin contact of breastfeeding imparts a psychological benefit in helping the child develop to full potential.

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Gold, particularly white gold, has historically held, and continues to hold, special significance for those committed to spiritual growth. However, the deepest truth is that it is human milk which is the most sublimating substance on the planet, as it completes the act of creation begun *in utero* and affords the individual the best chance of obtaining physical and psychological optimisation. As such, it is the white gold of the alchemist. It is intriguing that the ancient alchemical symbol for gold, the circumpunct, is a circle with a dot in the centre—a very elegant representation of a breast!

Milk is a substance that we tend to take for granted. It is a food staple enjoyed in both savoury as well as sweet forms. Yet humans are the only mammals that continue to enjoy what milk has to offer past the weaning stage—and by drinking the milk of other mammals. Why is that so? Apart from the fact that dairy foods constitute a nutritious and convenient food choice, the answer most probably lies in the fact that humans are unique among the primates in that we tend not to lactate for the standard span of six times the gestation period, i.e., in our case, 54 months. In doing so, humans seemingly display more reptilian traits when it comes to reproduction. So we then go through life playing catch-up, craving what we lacked as an infant because milk provides inner nourishment on both physical and psychological levels.

Milk is a mythical symbol of immortality that may be found in different cultural and literary traditions, including those of the Celts, Christians, Greeks, Hindus and Muslims. The Israelites searched for the Land of Milk and Honey, while Mohammed is reputed to have said that "to dream of milk is to dream of learning and knowledge". The Hindu myth on achieving immortality describes how, for 1,000 years, the Devas and Asuras churned the Ocean of Milk until the prize elixir (*amrita*) surfaced. After a struggle, it was the Devas who prevailed and, after drinking it, they obtained immortality and ruled the cosmos, thereby consigning the Asuras to rule over the bowels of the Earth and the depths of the ocean. The offspring of Zeus all needed to be suckled by Hera in order to obtain immortality. It is said that when Hera was disturbed when Zeus plotted to have her inadvertently suckle Hercules during her sleep, her let-down sprayed across the firmament, giving rise to the Milky Way—our galaxy of stars. The Greek word for milk is *gala*, and so this legend and our love affair with milk take on added meaning with the popularisation of the notion by Dr Carl Sagan that we are all "the stuff of stars"![1]

In dream symbology, milk signifies success or the gaining of spiritual knowledge. Actually, to dream of milk is understood to be a very positive message from one's unconscious mind. While it may suggest a need for deep and fundamental nourishment, the inference is that it is available. In particular, a dream of breast-feeding may be about nourishing the needy inner child. However, it may also be about offering spiritual inspiration to

Figure 1

CONSTITUENTS OF THE MILK OF VARIOUS MAMMALS (g/100g)

Mammal	Total Solids	Fat	Total Protein	Lactose	Ash
Antelope	13.5	1.3	6.9	4.0	1.3
Ass	11.1	1.2	1.7	6.9	1.3
Baboon	14.2	5.0	1.6	7.3	0.3
Bison	13.2	1.7	4.8	5.7	0.96
Black bear	41.2	24.5	14.5	0.4	1.8
Black rhinoceros	8.1	0.0	1.4	6.1	0.3
Camel	14.4	4.9	3.7	5.1	0.7
Cat	25.4	10.9	11.1	3.4	n/a
Cow (Jersey)	15.0	5.5	3.9	4.9	0.7
Deer	34.1	19.7	10.4	2.6	1.4
Dog/Wolf	25.1	12.9	7.9	3.1	1.2
Dolphin	30.4	14.1	10.4	5.9	n/a
Elephant	24.1	15.1	4.9	3.4	0.76
Goat	12.0	3.5	3.1	4.6	0.79
Guinea pig	15.8	3.9	8.1	3.0	0.82
Horse	11.0	1.6	2.7	6.1	0.51
Human	13.6	5.5	1.0	7.0	0.1
Kangaroo	9.5	2.1	6.2	trace	1.2
Lion	24.8	13.7	8.5	2.6	n/a
Llama	14.0	5.6	4.3	3.3	0.8
Mink	22.6	8.0	7.0	6.9	0.7
Monkey	14.5	3.9	2.1	5.9	2.6
Orang-utan	11.2	3.5	1.5	6.0	0.2
Opossum	20.1	6.1	9.2	3.2	1.6
Polar bear	42.9	31.0	10.2	0.5	1.2
Pig	19.5	8.2	5.8	4.8	0.63
Rabbit	26.4	12.2	10.4	1.8	2.0
Rat	30.5	14.8	11.3	2.9	1.5
Reindeer	36.1	22.5	10.3	2.6	0.7
Sea lion	50.9	36.5	13.8	0.0	0.6
Seal (grey)	67.7	53.2	11.2	2.6	0.7
Sheep	16.3	5.3	5.5	4.6	0.9
Whale	51.8	34.8	13.6	1.8	1.6

Sources: Various, including primary source R. Jenness and R. E. Sloan, "Composition of Milk", in B. L. Larson and V. R. Smith (editors), *Lactation*, vol. 3, *Nutrition and Biochemistry of Milk Maintenance*, Academic Press, New York, 1974

others. In this regard, we need to acknowledge that the breasts sit over the heart chakra, and that human milk is rich in oxytocin—the hormone of love! On the other hand, to dream of asking for or drinking milk suggests a need for spiritual sustenance; and this is, perhaps, what underpins our continuing love affair with milk.

We spend our lives trying to return to the breast, which tends not to be offered for very long in the developed world as women struggle with what I call the Curse of Eve: the catch-22 situation that perpetuates in developed cultures as women struggle to balance what they give to their offspring against what they give to themselves.

Uniqueness of Species-Specific Milk

Mammals are primed to nourish their offspring *ex utero* with a substance that is designed in a species-specific way to complete the cycle of growth and development that was initially governed by the placenta.

This is how female mammals play a unique and unequivocal role in providing for the next generation. Perusal of the chart (figure 1) shows us at a glance that each mammal's milk is unique unto itself within the broader confines of being a substance that contains water, amino acids (protein), carbohydrate (lactose), fat and minerals (ash).

This situation of species specificity is Nature's way of ensuring that each mammal is initially nourished with a substance that uniquely gives it an optimum start in life. For instance, seal's milk is very high in protein and fat; this is to ensure that the calf grows quickly and is able to put down fat to protect it against its hostile environment as well as to be able to sustain itself for days at a time while the mother goes off to feed herself. Kangaroo milk is low in solids and has a very high water content, which is consistent with what's needed for survival in the harsh, dry conditions of the animal's habitat. Human milk, on the other hand, is low in protein (we grow slowly) and high in lactose, as lactose is a prime promoter of brain growth.

Although it is the milk of the ass which has the closest correspondence to human milk, there is, naturally, good correspondence between the profiles of human, baboon, monkey and orang-utan milks as all are from primates. A distinguishing feature of primate milk is the high lactose, as it is this component of milk that optimises brain growth and promotes higher-order cognitive functioning. Except for humans living in developed cultures, the general rule among primates is that they lactate for six times the gestation rate. In indigenous cultures, females tend to feed their infants for many years, and may even kill a newborn if they inadvertently reproduce again while they are still lactating.[3] Harsh as this may seem, it is a definitive statement regarding the crucial role that human milk plays in sustaining an infant. When there is no way a mother can reach for a tin of formula, her options are limited.

Milk is a universal substance with much consistency with respect to all constituents across all races and geographical areas; and while diet may affect levels of fat and some vitamins and minerals, it does not affect the whey component...

In fact, UNICEF tells us that 1.4 million babies die each year due to lack of breastmilk.[4] In situations where mothers think that they are choosing the sophisticated or "scientific" option, the realities of lack of clean water, poor sanitation and insufficient funds to buy formula and pay for heating soon hit home and babies die of malnutrition or infection.

This is a shame, as the milk of a mother in a personally deprived situation differs but little from that of her more well-fed sister. Milk is a universal substance with much consistency with respect to all constituents across all races and geographical areas; and while diet may affect levels of fat and some vitamins and minerals, it does not affect the whey component (which is 60 per cent of the protein in mature human milk, and 90 per cent of colostrum). This contains a wealth of components which are never listed on the side of a tin of formula, which is usually based on bovine protein with a whey component of just 20 per cent and on a profile designed to optimise the development of the bovine species, not the human.

Apart from a comprehensive array of vitamins, minerals (including trace elements) and fatty acids (of which the short-chain ones promote gut closure and therefore help protect against allergies and *Giardia*, and the long-chain ones optimise central nervous system development), human milk is unique in that it also contains:[5]

- a range of antioxidants;
- two specialist proteins (α1-antipripsin and α2-macroglobulin protein) which offer protection against influenza, parainfluenza and rotavirus;
- its very own bifidus factor which enhances proliferation of lactobacilli, thereby inhibiting some E. *coli* and Enterobacteriaceae including *Shigella* and *Salmonella*;
- bile salt–stimulated lipase which generates fatty acids and monoglycerides that inactivate *Giardia lamblia*, *Entamoeba histolytica* and *Trichomonas vaginalis*;
- complement which protects against E. *coli*;
- a range of cytokines which initiate and stimulate host defence, prevent auto-immunity, have anti-inflammatory effects on the upper respiratory and gastro-intestinal tracts, and stimulate development of the digestive system;
- 20 different enzymes which perform various functions including biosynthesis and preservation of milk components in the mammary gland, and also have a transport and anti-infective role, thereby promoting digestive function in the neonate;
- epidermal growth factor which promotes increased growth and maturation of the foetal pulmonary epithelium, stimulates ornithine decarboxylase activity and DNA synthesis in the digestive tract, and accelerates the healing of wounds (including the repair of abraded nipples);
- gangliosides which are thought to help protect the neonate from toxin-induced diarrhoea, especially from E. *coli* and V. *cholerae*;
- immunoglobulins of which more than 30 have been identified: 18 are from maternal serum, and the rest are found exclusively in the milk; sIgA, which is found in levels five times that of maternal serum, is the most

important of these (immunoglobulins protect mucosa and have bacterial and viral neutralising capacity; sIgA is known to protect against enteroviruses [poliovirus types 1, 2, 3; Coxsackievirus types A9, B3, B5; Echovirus types 6 and 9], herpes virus [C*ytomegalovirus*; H*erpes simplex*], Semliki Forest virus, respiratory syncytial virus, rubella, reovirus type 3 and rotavirus; IgM and IgG protect against respiratory syncytial virus and rubella);

• a range of hormones that perform a variety of functions;

• interferon which also has antiviral activity;

• interleukins which are a sub-group of cytokines which augment the newborn's immune system by increasing antibody production (especially of IgA), enhancing phagocytosis, activating T cells and increasing α1-antitrypsin production by mononuclear phagocytes;

• lactoferrin which binds iron and therefore inhibits host–pathogen interactions;

• lactoperoxidase which destroys streptococci and enteric bacteria;

• lymphocytes of which human milk contains both the T (thymus) and B (bursa) types; these lymphocytes transfer long-lasting maternal antibodies to the infant and synthesise sIgA antibodies in the breast;

• lysozyme which lyses bacteria through destruction of the cell wall; it is found in large quantities in the stools of breastfed babies and is thought, therefore, to affect gut flora;

• macrophages which synthesise complement, lactoferrin and lysozyme and perform a variety of other functions including phagocytosis of fungi and bacteria;

• nucleotides which constitute 15–20 per cent of the non-protein nitrogen in human milk; they are thought to influence the immune system, iron absorption, intestinal flora, plasma lipoproteins and growth of intestinal and hepatic cells;

• oligosaccharides of which more than 80 have been identified; they inhibit the binding of enteropathogens to their host receptors.

Additionally, some of the most recent research on human milk is looking at a range of factors involved in its role as a protector against obesity in later life.[6] Focus is also being given to the dynamic interaction between mother and infant, whereby she provides antibodies through her milk when her infant is suffering from any current bacterial or viral assault. A range of stem cells in human milk has a role to play in this, and their discovery is very exciting.

There can therefore be no denying the facts of the matter; this is an impressive and comprehensive profile, affording the developing infant the full spectrum of what Mother Earth has to offer.

In sustaining us, human milk allows us to incarnate fully, to become entrained with the planet's vibration. To have "harmonic resonance" promotes the best of health, according to Captain Bruce Cathie.[7] To have the best of health frees us to focus on the "higher purpose of our existence", according to Dr Samuel Hahnemann.[8] And so it is human milk, accessed throughout the baby and toddler years, that best provides us with a framework for pursuing these options.

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Disadvantages of Substitutes

There is morbidity associated with not receiving species-specific milk. Furthermore, when assessing the role that human milk plays in optimising physical maturation, consideration also needs to be given to the range of known disadvantages that beset the infant raised on a breast milk substitute. Not only does he miss out on all the unique benefits listed above, but his gut flora are different from those of his breastfed friend and he may have to deal with:

• too much aluminium;

• too much manganese;

• too much lead;

• too much cadmium;

• too much iron;

• transgenic soy and yeast;

• traces of algae and fungi used to manufacture the long-chain polyunsaturated fatty acids found in tins of "gold standard" formula selected by well-meaning mothers who want what's best for their infants;

• hexane used to produce the above;

• E*nterobacter sakazakii* (found in up to 14 per cent of tins of formula, which is the reason why maternity wards stock only ready-made formulas; tins are banned from hospitals because of this bacterium).

Added to this is the fact that the lipids in formula are included according to availability and price. Perusal of a range of tins of formula will identify a variety of lipid sources, including coconut, corn, "marine oils" (i.e., genetically engineered from algae), palm olein, soy lecithin and vegetable (probably safflower). Interestingly, research published in 2003[9] suggests that healthy, full-term infants fed a formula containing palm oil as the predominant oil in the fat blend have significantly lower bone mineral content and bone mineral density than those fed formula without palm oil

(specifically safflower, coconut and soy). Therefore, the inclusion of palm oil in infant formula at levels needed to provide a fatty acid profile similar to that of human milk leads to (apart from deforestation in some parts of Asia) lower bone mineralisation, as it has been shown to lower calcium and fat absorption.

Calcium absorption is also problematic due to the fact that cow's milk has a calcium to phosphorus ratio of 1:3, whereas the calcium to phosphorus ratio in human milk is 1:1, thereby making the calcium easily absorbable. This ratio of 1:3 binds the calcium to the phosphorus for excretion. While cow's milk is touted as a "good source of calcium", this ratio makes it not easily bio-available. The best absorbable sources of calcium are nuts and seeds, the bones of oily fish and green leafy vegetables. Cows get all their calcium from grass!

However, further on the subject of lipids, it is their role in potentiating central nervous system development that best defines their role in milk, and it's a well-established fact that breastfeeding increases intelligence. Although this comes about largely due to the high amount of lactose in human milk, it is also due to the long-chain polyunsaturated fatty acids (PUFAs) which abound in human milk when mothers simply include plenty of seafoods in their diet or consume flaxseed or hempseed oils. As early as 1929, enhanced learning ability and higher IQ scores at 7–13 years of age were described in children exclusively breastfed for four to nine months.[10] However, since that time, definitive data to reinforce this understanding regarding human milk and cognitive function have been provided by research which suggests that breastmilk, generally, has a significant impact on the development of the central nervous system. Premature infants who were provided breastmilk by nasogastric tube have been compared to those of similar gestational age and birth weight who were nourished by formula. Results showed that the breastmilk-fed infants were more advanced developmentally at 18 months and that this advantage continued through to eight years of age.[11]

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Similar positive results are associated with babies born full term and breastfed,[12] and these are reinforced by the findings of an 18-year longitudinal study of 1,000 New Zealand children which demonstrated that breastfeeding for eight months or longer imparts an increase in cognitive and educational achievement. A range of measures, including standardised tests, teacher ratings and academic outcomes in high school and young adulthood, confirmed these effects.[13] These results back up a similarly large study of 13,135 children conducted previously in the British Isles, which found a positive correlation between the duration of breastfeeding and performance in tests of vocabulary and visuomotor coordination.[14] Other studies have further supported the notion that visual acuity is enhanced by breastfeeding.[15, 16, 17, 18]

Humans are the only mammals on the planet who habitually drink the milk of another species, and there is no research to support the notion that other milks provide the same positive effects as human milk and much to suggest otherwise. Apart from problems already mentioned, a multitude of health issues ensue when non-human milks are the staple diet of the infant. For example, it is understood in veterinary circles that feeding non-species-specific milk to an animal causes apnoeic episodes. This is what happens to the formula-fed infant. He's simply not able to breathe easily during feeding because of aggravation from the non-species-specific protein fragments in the formula. Research has recorded that there are different suck/swallow patterns between bottle-fed and breastfed infants, and further has established that suckling at the breast optimises orofacial development resulting in benefits with respect to teeth spacing and speech development.

Additional points of consideration here are that infants who are weaned early and raised on a breastmilk substitute are at an increased risk in the long term of:[19]

- obesity (artificially fed infants consume 30,000 more calories than breastfed babies in the first eight months; the obesity issue, however, is complicated by the fact that research conducted in the 1970s demonstrated that the DPT vaccination interferes with insulin metabolism);
- Crohn's disease;
- ulcerative colitis;
- coeliac disease;
- cardiovascular disease;
- type 2 diabetes.

In the short term, there is an increased risk of sudden infant death syndrome (SIDS) as well as:

- necrotising enterocolitis (NEC) and late-onset sepsis in pre-term infants;
- bacterial meningitis in pre-term infants in neonatal intensive care units (homœopaths recognise that it's the tubercular miasm infants who have bleeding into the brain when they're given "human milk fortifier", i.e., cow's milk formula);
- botulism;
- diarrhoea;
- upper respiratory tract infections and otitis media;
- urinary tract infections.

Added to these is an increased risk of type 1 diabetes because the majority of breastmilk substitutes are based on cow's milk, and research has long established a link between cow's milk consumption and type 1 diabetes.

Psychological Benefits Associated with Human Milk

The other aspect of this discussion, however, must concern itself with the psychological benefits that also occur when babies enjoy such an extended time with their mothers. It was Dr Niles Newton in the 1970s who was the first to suggest (in the lactation literature) that breastfeeding imparts a psychological benefit to the neonate. She noted that such children develop into more "mature, secure and assertive" individuals.[20]

This is consistent with earlier observations made by Erik Erikson who, as a psychologist, identified two distinct stages in a child's development.[21] Stage 1 lasts from birth to 18 months and is labelled *Trust vs Mistrust*. During this developmental stage, the infant who has his needs met and feels physically safe grows in confidence and comes to trust his environment. As he begins to become ambulatory, he then comes and goes from his mother with confidence and a sense of being in charge, which helps to minimise separation anxiety. Those toddlers who come to trust their environment in this way then move easily into the next stage.

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Erikson described Stage 2 as lasting from 18 months to three years, and he labelled it *Autonomy vs Shame*. During this second stage, the breastfed toddler further grows in reassurance and confidence as he begins to explore his exciting new world with his newly acquired motor and verbal skills. Breastfeeding during this stage is as much for emotional as well as nutritional needs, as the toddler's process of individuation gradually unfolds and he grows in the realisation that he is a separate individual who has control over his environment. These stages, during which the toddler grows into the mental capability to recognise that objects have permanency when out of sight (and therefore to accept the notion of separateness), have also been defined by Piaget and labelled Object Constancy.[22]

Perusal of figure 2 makes these stages easier to grasp. To my mind, Erik Erikson has elegantly defined man's journey with these eight stages, each governed by a positive or a negative attribute. So, a normal, drug-free physiologic birth, after which an infant is given the space to search for the nipple himself, offers the newborn a valuable first lesson: if I struggle, I will survive. Then, if he has access to his mother's breastmilk throughout the next four years, he has the best chance, early on in his development, of becoming an autonomous and a trusting individual, and this sets the pattern for life and holds out the reward of self-actualisation.

However, more recently, other pertinent observations regarding the psychological importance of the mother/baby dyad have been made by a group of Swedish researchers[23] and followed up by Nils Bergman, MD, who has named this unit a "single bio-sociological organism".[24] As a researcher, Dr Bergman has done much to promote the concept of the "kangaroo mother-care" phenomenon, in which mother–infant skin-to-skin contact is the natural "habitat" for all newborn babies and is the one that best promotes both psychological and physiological development. Bergman argues that removal from this habitat, which promotes

Figure 2

ERIK ERIKSON'S EIGHT EPIGENETIC STAGES OF MAN

VIII	Maturity/Old Age: (WISDOM)	Ego Integrity vs Despair, Disgust
VII	Middle Adulthood: (CARE)	Generativity vs Stagnation
VI	Young Adulthood: (LOVE)	Intimacy vs Isolation
V	Puberty and Adolescence: (FIDELITY)	Ego Identity vs Role Confusion
IV	School Age: Latency (COMPETENCY)	Industry vs Inferiority
III	Play Age: Locomotor/Genital (PURPOSE)	Initiative vs Guilt
II	Early Childhood: Muscular/Anal (WILL POWER)	Autonomy vs Shame, Doubt
I	Infancy: Oral/Sensory (HOPE)	Basic Trust vs Mistrust

Source: Adapted from diagram in *Childhood and Society* by Erik H. Erikson, 1963, reproduced in *Personality Theories*, L. A. Hjelle and D. J. Ziegler (editors), McGraw Hill Inc., Sydney, 1985, 2nd edition

easy access to the breast, results in a protest–despair response, first so-named by Dr Jeffrey Alberts[25] but originally identified in orphans after World War II and subsequently studied in monkeys by Dr Harry Harlow.[26]

The Solution

So, with all this to consider, that is why I offer to each mother in my care (as she weans) a means of preserving her milk by succussing it to a 7C homœopathic potency,[27] so that her baby can continue to have the advantages that her milk can offer while trying to cope with surviving in a less than optimal circumstance. Instructions on how to do this are available in *Milk Matters* at http://www.patriciahatherly.com. It is but a small thing with huge implications, as it allows mothers some freedom and peace of mind when, for whatever reason, breastfeeding her infant is just not possible, while ensuring that the baby is not totally compromised.

Meanwhile, we need to work towards the establishment of human milk banks so that mothers can make a meaningful choice about when they wean. To be able to reach for a tin of formula made from human milk would be a real bonus; not only would mothers be able to benefit from the freedom that this would offer, but babies would derive tangible life-long benefits from a developmental perspective. And the planet, also, would benefit, as breastmilk is an ecologically sound product that contributes but little to any environmental disturbance of Earth's ecosystems. Our atmosphere, soil, flora, fauna and waterways are less affected during human milk production when compared to the production of breastmilk substitutes. It is a totally renewable resource and, as such, breastfeeding is essentially a carbon-neutral activity.

Furthermore, apart from the physical and psychological advantages afforded the individual raised on human milk, there are real and tangible benefits that are afforded the economy when babies receive breastmilk for an extended period. Valuable natural resources are not wasted in production and distribution, and it helps to promote population control, child and family welfare as well as good health for both mother and baby. Lactating women worldwide produce (on average) half a litre of milk daily. As billions of litres are therefore produced annually throughout the world, breastmilk's contribution to the gross national product and balance of payments of all nations is considerable.[28, 29, 30]

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It therefore begs the question: if countries have the wherewithal to establish and maintain a network of blood and sperm banks, deeming them necessary for various health, economic and social reasons, why can't the same resources be available to establish and maintain human milk banks? The advantages to us as a species would be enormous. There is no substitute for the real thing. Human milk is the white gold that we seek. ∞

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