

What's ONLY In Human Milk—

**Immune components to protect infants from
GI, lung, ear and other infections:**

Anti-adherence substances
Anti-protease
Anti-staphylococcal factor(s)
Antiviral factor(s)
B – lymphocytes
Bifidus factor
Catalase
Chemotactic factors
Complement
Cytokines
Gangliosides
Human Milk Oligosaccharides
Immunoglobulins
(IgG, IgM, IgE, IgD)

Interferon
Interleukins
Lactoferrin
Leukocyte enzymes
Lysozyme
Macrophages
Neutrophils
Prostaglandins
Proteases
sIgA (11s, 7s)
Secretory component
Sulfhydryl oxidase
T – lymphocytes



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For the Health Professional:

**Infant Formula
IS *NOT* the Same
as Breast Milk**

Learn the important differences!



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After 50+ years...

Science cannot duplicate human milk with its 200+ bioactive components. Biochemical research has made advances in identifying human milk components, and biotechnology has produced a few of these non-nutrient components. But, it is *no longer ethical* for health professionals to equate infant formula to human milk. For example, infants fed formula have slower developing guts.

Evidence-based medicine compels health professionals to provide complete information so parents can make an informed choice about infant feeding. Providing this evidence is not done to make families feel guilty, but to *meet medical ethics requirements; including the risks of formula feeding.*

This fact sheet presents a comprehensive (but not complete) list of human milk components. The function within the infant's body of many of these components has yet to be specified. Nevertheless, the great differences between these two infant feeds is remarkable.

Infant formula does contain similar nutritional components*:

Protein (BUT, human milk casein is more rapidly absorbed than cow milk casein or soy protein.)

Non-protein Nitrogen

Lactose

Fatty Acids

Fats (unsaturated and saturated)

Vitamins

Minerals

**Except human milk contains cholesterol while formula does not.*

What's ONLY In Human Milk—

Growth factors to stimulate development of brain, neural and organ cells:

α -Fetoprotein	Insulin
Adiponectin	Insulin-like Growth Factor (IGF-1)
Adrenocorticotropin	Nerve Growth Factor (NGF)
Corticoid-binding protein	Neurotensin
Corticosteroids	Prostaglandins
Epidermal Growth Factor (EGF)	Somatostatin
Epithelial cells	Stem cells
Erythropoietin	Thyroid-releasing hormone (TRH)
Estrogens	Thyroxine (T3, reverse T3, T4)
Gonadotropins	Transforming growth factors – α , β

What's ONLY In Human Milk—

Enzymes and hormones to enhance gut maturation and digestion:

α 1-antichymotrypsin	Lactoferrin
α 1-antitrypsin	Lactose synthetase
Alkaline phosphatase	Lipases (lipoprotein lipase, bile salt-dependent lipase)
Amylase	Lysozyme
Bifidus factor	Peptide Histidine
Bombesin	Methionine (PHM)
Catalase	Peptide YY (PYY)
Fatty acid synthetase	Peroxidase
Folate uptake enhancer	Proteases
Gastric Regulatory Peptide (GRP)	Sulfhydryl oxidase
Gastrin Inhibitory Peptide (GIP)	Transferrin
Glutathione peroxidase	Vitamin B12 – binding protein
Insulin	Xanthine Oxidase