For the Health Professional:

Infant Formula IS NOT the Same as Breast Milk

Learn the important differences!

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

References:


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

## What’s ONLY In Human Milk—

### Enzymes and hormones to enhance gut maturation and digestion:

- α1-antichymotrypsin
- α1-antitrypsin
- Alkaline phosphatase
- Amylase
- Bifidus factor
- Bombesin
- Catalase
- Fatty acid synthetase
- Folate uptake enhancer
- Gastric Regulatory Peptide (GRP)
- Gastrin Inhibitory Peptide (GIP)
- Glutathione peroxidase
- Insulin
  - Lactoferrin
  - Lactose synthetase
  - Lipases (lipoprotein lipase, bile salt-dependent lipase)
  - Lysozyme
  - Peptide Histidine
  - Methionine (PHM)
  - Peptide YY (PYY)
  - Peroxidase
  - Proteases
  - Sulfhydryl oxidase
  - Transferrin
  - Vitamin B12 – binding protein
  - Xanthine Oxidase