

# Did you ever wonder what's in... ?

## Breastmilk

Water  
 Carbohydrates (energy source)  
 Lactose  
 Oligosaccharides (see below)  
 Carboxylic acid  
 Alpha hydroxy acid  
 Lactic acid  
 Proteins (building muscles and bones)  
 Whey protein  
 Alpha-lactalbumin  
 HAMLET (Human Alpha-lactalbumin Made Lethal to Tumour cells)  
 Lactoferrin  
 Many antimicrobial factors (see below)  
 Casein  
 Serum albumin  
 Non-protein nitrogens  
 Creatine  
 Creatinine  
 Urea  
 Uric acid  
 Peptides (see below)  
 Amino Acids (the building blocks of proteins)  
 Alanine  
 Arginine  
 Aspartate  
 Cysteine  
 Cytidine  
 Glutamate  
 Histidine  
 Isoleucine  
 Leucine  
 Lysine  
 Methionine  
 Phenylalanine  
 Proline  
 Serine  
 Taurine  
 Theronine  
 Tryptophan  
 Tyrosine  
 Valine  
 Carnitine (amino acid compound necessary to make use of fatty acids as an energy source)  
 Nucleotides (chemical compounds that are the structural units of RNA and DNA)  
 5'-Adenosine monophosphate (5'-AMP)  
 3'-5'-Cyclic adenosine monophosphate (3'-5'-cyclic AMP)  
 5'-Cytidine monophosphate (5'-CMP)  
 Cytidine diphosphate choline (CDP-choline)  
 Guanosine diphosphate (UDP)  
 Guanosine diphosphate - mannose  
 3'-Uridine monophosphate (3'-UMP)  
 5'-Uridine monophosphate (5'-UMP)  
 Uridine diphosphate (UDP)  
 Uridine diphosphate house (UDP-H)  
 Uridine diphosphate-N-acetyl-hexosamine (UDP-NAH)  
 Uridine diphosphate-glucuronic acid (UDP-GA)  
 Several more novel nucleotides of the UDP type  
 Fats  
 Triglycerides  
 Long-chain polyunsaturated fatty acids  
 Docosahexaenoic acid (DHA) (important for brain development)  
 Arachidonic acid (AHA) (important for brain development)  
 Linoleic acid  
 Alpha-linolenic acid (ALA)  
 Eicosapentaenoic acid (EPA)  
 Conjugated linoleic acid (Rumenic acid)  
 Free Fatty Acids  
 Monounsaturated fatty acids  
 Oleic acid  
 Palmitoleic acid  
 Heptadecenoic acid  
 Saturated fatty acids  
 Stearic  
 Palmitic acid  
 Lauric acid  
 Myristic acid  
 Phospholipids  
 Phosphatidylcholine  
 Phosphatidylethanolamine  
 Phosphatidylinositol  
 Lysophosphatidylcholine  
 Lysophosphatidylethanolamine  
 Plasmalogens  
 Sphingolipids  
 Sphingomyelin  
 Gangliosides  
 GM1  
 GM2  
 GM3  
 Glucosylceramide  
 Glycosphingolipids  
 Galactosylceramide  
 Lactosylceramide  
 Glabosylceramide (GB3)  
 Globoside (GB4)  
 Sterols  
 Squalene  
 Lanosterol  
 Dimethylsterol  
 Methosterol  
 Lathosterol  
 Desmosterol  
 Triacylglycerol  
 Cholesterol  
 7-dehydrocholesterol  
 Stigma-and campesterol  
 7-ketocholesterol  
 Stosterol  
 beta-hathosterol  
 Vitamin D metabolites  
 Steroid hormones  
 Vitamins  
 Vitamin A  
 Beta carotene  
 Vitamin B6  
 Vitamin B8 (Inositol)  
 Vitamin B12  
 Vitamin C  
 Vitamin D  
 Vitamin E  
 alpha-Tocopherol  
 Vitamin K  
 Thiamine  
 Riboflavin  
 Niacin  
 Folic acid  
 Pantothenic acid  
 Biotin  
 Minerals  
 Calcium  
 Sodium  
 Potassium  
 Iron  
 Zinc  
 Chloride  
 Phosphorus  
 Magnesium  
 Copper  
 Manganese  
 Iodine  
 Selenium  
 Choline  
 Sulphur  
 Chromium  
 Cobalt  
 Fluorine  
 Nickel  
 Metal  
 Molybdenum (essential element in many enzymes)  
 Growth Factors (aid in the maturation of the intestinal lining)  
 Cytokines  
 Interleukin-1b (IL-1b)  
 IL-2  
 IL-4  
 IL-6  
 IL-8  
 IL-10  
 Granulocyte-colony stimulating factor (G-CSF)  
 Macrophage-colony stimulating factor (M-CSF)  
 Platelet derived growth factors (PDGF)  
 Vascular endothelial growth factor (VEGF)  
 Hepatocyte growth factor-alpha (HGF-alpha)  
 HGF-beta  
 Tumor necrosis factor-alpha  
 Interferon-gamma  
 Epithelial growth factor (EGF)  
 Transforming growth factor-alpha (TGF-alpha)  
 TGF-beta 1  
 TGF-beta 2  
 Insulin-like growth factor-I (IGF-I) (also known as somatomedin Q)  
 Insulin-like growth factor- II  
 Nerve growth factor (NGF)  
 Erythropoietin  
 Peptides (combinations of amino acids)  
 HMGF I (Human growth factor)  
 HMGF II  
 HMGF III  
 Cholecystokinin (CCK)  
 beta-endorphins  
 Parathyroid hormone (PTH)  
 Parathyroid hormone-related peptide (PTHrP)  
 beta-defensin-1  
 Calcitonin  
 Gastrin  
 Motilin  
 Bombesin (gastric releasing peptide, also known as neuromedin B)  
 Neurotensin  
 Somatostatin  
 Hormones (chemical messengers that carry signals from one cell, or group of cells to another via the blood)  
 Cortisol  
 Triiodothyronine (T3)  
 Thyroxine (T4)  
 Thyroid stimulating hormone (TSH) (also known as thyrotropin)  
 Thyroid releasing hormone (TRH)  
 Prolactin  
 Oxytocin  
 Insulin  
 Corticosterone  
 Thyromoposin  
 Gonadotropin-releasing hormone (GnRH)  
 GRH  
 Leptin (aids in regulation of food intake)  
 Ghrelin (aids in regulation of food intake)  
 Adiponectin  
 Feedback inhibitor of lactation (FIL)  
 Eicosanoids  
 Prostaglandins (enzymatically derived from fatty acids)  
 PG-E1  
 PG-E2  
 PG-F2  
 Leukotrienes  
 Thromboxanes  
 Prostaglandins  
 Enzymes (catalysts that support chemical reactions in the body)  
 Amylase  
 Arylsulfatase  
 Catalase  
 Histaminase  
 Lipase  
 Lysozyme  
 PAF-acetylhydrolase  
 Phosphatase  
 Xanthine oxidase  
 Antiproteases (thought to bind themselves to macromolecules such as enzymes and as a result prevent allergic and anaphylactic reactions)  
 alpha-1-antitrypsin  
 alpha-1-antichymotrypsin  
 Antimicrobial factors (are used by the immune system to identify and neutralize foreign objects, such as bacteria and viruses)  
 Leukocytes (white blood cells)  
 Phagocytes  
 Basophils  
 Neutrophils  
 Eosinophils  
 Macrophages  
 Lymphocytes  
 B lymphocytes (also known as B cells)  
 T lymphocytes (also known as T cells)  
 sIgA (Secretory immunoglobulin A) (the most important anti-infective factor)  
 IgA2  
 IgG  
 IgD  
 IgM  
 IgE  
 Complement C1  
 Complement C2  
 Complement C3  
 Complement C4  
 Complement C5  
 Complement C6  
 Complement C7  
 Complement C8  
 Complement C9  
 Glycoproteins  
 Mucins (attaches to bacteria and viruses to prevent them from clinging to mucousal tissues)  
 Lactadherin  
 Alpha-lactoglobulin  
 Alpha-2 macroglobulin  
 Lewis antigens  
 Ribonuclease  
 Haemagglutinin inhibitors  
 Bifidus factor (increases growth of Lactobacillus bifidus - which is a good bacteria)  
 Lactoferrin (binds to iron which prevents harmful bacteria from using the iron to grow)  
 Lactoperoxidase  
 B12 binding protein (deprives microorganisms of vitamin B12)  
 Fibrinectin (makes phagocytes more aggressive, minimizes inflammation, and repairs damage caused by inflammation)  
 Oligosaccharides (more than 200 different kinds!)

## Formula

Water  
 Carbohydrates  
 Lactose  
 Corn maltodextrin  
 Protein  
 Partially hydrolyzed reduced minerals whey protein concentrate (from cow's milk)  
 Fats  
 Palm olein  
 Soybean oil  
 Coconut oil  
 High oleic safflower oil (or sunflower oil)  
 M. alpina oil (Fungal DHA)  
 C. colini oil (Algal ARA)  
 Minerals  
 Potassium citrate  
 Potassium phosphate  
 Calcium chloride  
 Tricalcium phosphate  
 Sodium citrate  
 Magnesium chloride  
 Ferrous sulphate  
 Zinc sulphate  
 Sodium chloride  
 Copper sulphate  
 Potassium iodide  
 Manganese sulphate  
 Sodium selenate  
 Vitamins  
 Sodium ascorbate  
 Inositol  
 Choline bitartrate  
 Alpha-Tocopherol acetate  
 Niacinamide  
 Calcium pantothenate  
 Riboflavin  
 Vitamin A acetate  
 Pyridoxine hydrochloride  
 Thiamine mononitrate  
 Folic acid  
 Phyloquinone  
 Biotin  
 Vitamin D3  
 Vitamin B12  
 Enzyme  
 Trypsin  
 Amino acid  
 Taurine  
 L-Carnitine (a combination of two different amino acids)  
 Nucleotides  
 Cytidine 5-monophosphate  
 Disodium uridine 5-monophosphate  
 Adenosine 5-monophosphate  
 Disodium guanosine 5-monophosphate  
 Soy Lecithin

