Immune Protection when joining the Family Diet

Infant formulae are the only alternatives to human milk for infants who are unable to continue breastfeeding through the first year of life. During complementary feeding, follow-on formula milk ensures a balanced intake of nutrients and is undoubtedly more suitable for infants than cows’ milk. Nestle has developed Nan 2 Protect Plus, a follow-up formula, suitable to help reinforce immune protection during complementary feeding.

Formula milk provides a lower intake of proteins and saturated fats and a higher concentration of polyunsaturated fats, iron and zinc than cows’ milk. Delaying the introduction of cows’ milk until the end of the first year of life, or even until after the second year, appears to play a fundamental role in the prevention of iron deficiency anaemia. It may also prevent obesity, the development of immuno-allergic symptoms and be important for neuro-behavioural development.

Why Nan 1 Protect Plus?

The aim is to provide formula-fed infants with the same structural and functional benefits observed in breastfed infants.

Opti–Pro

Changes in protein quantity and quality allow infant formulae to achieve a balance between providing the correct plasma amino acid profile and reducing the protein intake, which could prevent obesity in later life. Alpha-lactalbumin is rich in the tryptophan, which is typically the limiting amino acid in formula, and as a result, formulas such as Nan 2 Protect Plus have been developed with lower protein but higher tryptophan concentrations. Studies show that feeding infants lactalbumin–rich formulas resulted in higher plasma tryptophan concentrations than did feeding standard formulas.

This may offer a number of advantages, which include producing plasma tryptophan concentrations equal to those found in breastfed infants and obviating the need for the body to dispose of excess nitrogen loads. Tryptophan is the precursor of the neurotransmitter serotonin and the neurosecretory hormone melatonin. Serotonin and melatonin regulate many neurobehavioral effects such as appetite, satiation, mood, pain perception, and the sleep-wake rhythm.

Bif & Cultures

Probiotics are the live, microbial food ingredients that are beneficial to health. The application of probiotics currently lies in reducing the risk of diseases associated with gut barrier dysfunction. Bifidobacteria and lactobacilli may inhibit the growth of pathogenic microorganisms through the production of lactic, acetic, and other organic acids, with a consequent decrease of intraluminal pH that inhibits the growth of some bacterial pathogens.

Breastfeeding induces predominantly lactobacilli and bifidobacteria, and also more frequently colonizes the guts of formula-fed infants supplemented with probiotics. Whereas non-supplemented formula-fed infants develop an intestinal microflora rich in Enterobacteria and gram-negative organisms. The introduction of complementary foods during weaning is a further critical time point in the colonization process when the composition of the microflora shifts to a more adult pattern. Attempts to promote the growth of normal gastrointestinal bacteria and prevent sensitisation to foods have included the use of probiotics.

Clinical studies suggest that select probiotics have a beneficial effect in the primary prevention of atopic diseases. Probiotics may be effective in preventing atopic dermatitis, asthma, and other allergic (including eczema and hay fever) and immune-mediated diseases. A Cochrane review shows that using Lactobacillus rhamnosus has been the most homogenous in reporting beneficial outcomes and may reduce the incidence of atopic eczema in infants.

Probiotics have also been demonstrated to be effective in preventing antibiotic-associated diarrhea, reducing the incidence and severity of necrotizing enterocolitis and reducing recurrent Clostridium difficile infections. Antibiotic-associated diarrhea has been associated with an increased number of days of hospitalization and higher medical costs. Probiotics are used widely to prevent and treat antibiotic associated diarrhea.

Probiotics added to formula have shown to reduce the severity of acute diarrhea. Resulting in a significant shortening in the duration of diarrhoea. While children with acute diarrhea who received L rhamnosus experienced a significantly shorter duration of diarrhoea than those children who received oral rehydration solution alone. The daily number of stools were significantly lower in children who received L rhamnosus. In acute rotavirus diarrhoea, Lactobacillus rhamnosus again significantly reduced the duration of diarrhea. Children receiving bifidobacteria experienced less-frequent and less-hard bowel movements and a decreased frequency of diaper rash.

Nan 2 Protect Plus contains both Lactobacillus rhamnosus and Bifidobacterium longum.
Industry News

Long-chain polysaturated fatty acids (LC-PUFAs)

The addition of Docosahexanoic acid (DHA, 22:6n-3) and Arachidonic acid (AA, 20:4n-6) is important for optimal health and development in formula-fed infants. Supplementation of formula with preformed AA is required to achieve plasma and red blood cell concentrations equivalent to those of the breastfed infant. A 2007 meta-analysis shows that LC-PUFA supplementation has no detrimental effect on growth. Softer stools (similar consistency as in human milk-fed infants) were also observed on LC-PUFA supplementation - a significantly positive effect as hard stools seem to be a complication of formula feeding when compared to human milk feeding.

It has been hypothesized that increased Omega-3 LC-PUFA and decreased Omega-6 LC-PUFA dietary intakes have contributed to the recently observed increases in asthma and other allergic diseases. The Childhood Asthma Prevention Study links increased consumption of n-3 LCPUFA in infants from 6 months of age and at risk of developing asthma with reduced wheeze, visits to the doctors because of wheeze, coughing during sleep and bronchodilator use.

Adding both DHA and AA to formula supports both visual and cognitive development. LC-PUFA supplementation during infancy is associated with lower blood pressure in later childhood and may reduce cardiovascular risk in adulthood.

Protective Immunonutrients

Vitamin A supplementation after 6 months of age is associated with a reduction in all-cause mortality of about 23-30%. It also reduces the risk of mortality and morbidity from some forms of diarrhea, measles, malaria, and HIV. Vitamin A also appears to decrease the severity of some diarrheal episodes in childhood and their incidence when administered in combination with zinc.

Zinc supplementation has been found to reverse impaired immune functions. There is now evidence that zinc supplementation can prevent episodes of diarrhea and pneumonia, as well as and decreases the duration of diarrhea.

A South African study published in Public Health Nutrition Journal (2005) showed that 6-12 month old infants who consumed commercially available infant products (e.g. fortified cereals/formula milk) had higher intakes of calcium, iron, zinc and vitamin A, amongst others; than infants who did not consume any infant products.

References: