

Press Information

Experts call for holistic approach in Paediatric Nutrition to improve overall health prospects of sick children

- ***Quantity and quality of protein is key to improving growth and cognitive function***
- ***Fat blends in infant formulas may achieve absorption comparable to human milk, providing long-term health benefits***
- ***Probiotics, proven to be safe, can reduce and prevent atopic dermatitis and antibiotic associated diarrhoea***

Vevey, Switzerland – June 2011. At a Nestlé Nutrition Institute Satellite Symposium held on Saturday, 28 May 2011 at the European Society of Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN), in Sorrento, Italy, leading experts called for a more holistic approach in order to optimise nutritional support for sick children. Improving the balance of protein energy intake, using fat blends in infant formula and the use of proven *probiotics* can improve outcomes for children with impaired growth structure, specific atopic diseases and reduced neurodevelopment.

Protein – a key component to combat malnutrition

Professor Olivier Goulet, National Reference Centre for Rare Digestive Diseases, University of Paris Descartes, France, focused upon the importance of protein energy intake during early infancy. During infancy, rapid growth is experienced with the infant gaining 20cm a year in the first months, contrasting with 10-20cm a year by the age of one. Nitrogen (from protein intake) accretion is a prerequisite for lean body mass (LBM) gain and skeletal growth (13% of body weight gain is protein). Growth velocity (GV) is reflecting LBM gain and thus, protein metabolism. Reduced GV is always an indicator of an inappropriate protein supply and/or an underlying disease state. Protein Energy Malnutrition (PEM) during this critical period may severely affect linear growth and final stature. He went on to explain that chronic PEM can also affect the ongoing development of higher cognitive processes during childhood (>5 years of age).¹ Compounding the problem is a lack of micronutrients such as Zinc and the need for a positive nitrogen balance in children.

Assessing the implications for clinical practice, Professor Goulet said, “Nutritional evaluation, together with appropriate and long-term nutritional management is essential. The protein requirements for infants and children are affected by both the quantity and the quality of protein. All indispensable amino acid requirements must be met by the diet or nutritional support to ensure normal rates of protein synthesis. In many conditions it has been shown that nutrition can help in reducing complications and improving outcomes, for example, in children with cystic fibrosis, Crohn’s disease and neurological disorders”. He explained that in clinical practice, catch-up growth may be achieved by providing sufficient protein intake according to requirements, as well as to energy supply (protein/energy ratio) and protein losses. In infants and children, optimal catch-up growth may be achieved by providing energy as 2 times the resting energy expenditure, protein in the range of 2 to 5g/kg/day (depending on protein losses

and/or catabolism) and the protein/energy ratio being 1g protein / 30-40 kcal or representing 9-11% of the total energy intake.

With regard to Crohn's disease, Professor Goulet analysed the evidence that demonstrated the value of nutritional therapy to be as effective as corticosteroids in improving intestinal inflammation and maintaining a more sustained clinical remission.²

Lipid requirements in infants and young children

Professor Olle Hernell, Department of Clinical Sciences and Pediatrics, Umeå University, Sweden highlighted the potential to develop infant formulas using fat blends more similar to human milk in an effort to improve long-term health outcomes.

Due to the rapid growth rate during infancy and the fact that fat accounts for half of the energy content in human milk, fat has traditionally been considered a major part of the dietary energy supply for infants and young children. Initially the main concern was therefore to develop infant formulas with fat blends that are efficiently digested and absorbed, for example fats rich in medium-chain fatty acids (FA), polyunsaturated FA and structured triglycerides (TG). An alternative might be to use fat blends more similar to human milk. These are potentially more physiological, and by supplementing formulas with recombinant human lipase, may achieve a fat absorption coefficient comparable to that of human milk. This approach is in line with increased concerns for the quality of dietary fat with respect to neurodevelopment and long-term health consequences.³ The recommendations on dietary lipids for children aim at reducing nutrition-related disease risks in cardiovascular, immunologic and inflammatory diseases.

Professor Hernell argued, there is a need for more evidence-based data to understand the required intakes of total lipids, various lipid classes and various fatty acids for infants and young children. He commented, "Some groups of children, for example pre-term infants, those on special diets due to free choice or eating problems, gastrointestinal mal-digestion, mal-absorption or metabolic diseases, may be at risk of insufficient intakes of essential fatty acids, or in particular their derivatives. From a safety perspective certain fat sources and certain fatty acids should not be included in the diets of infants and young children". He also added that some infants and children with fat mal-absorption may benefit from medium chain triglycerides (MCT), structured triglycerides or lipase supplements in the diet.

Referring to the optimal approach for sick children, he endorsed the view that those on long-term enteral nutrition should be provided a fat quality in agreement with current recommendations for healthy children. Many of these infants are undernourished or have diseases that result in the need for a source of EPA and DHA (eicosapentaenoic acid and docosahexaenoic acid). In the absence of known requirements, it seems reasonable to aim at the recommended intake for healthy children on a normal diet, which is two meals of fat fish per week (250 mg EPA and DHA).⁴

Recently both the World Health Organization (WHO) and the European Food Safety Authority (EFSA) have published opinions on requirements and recommendations on dietary fat quantity and quality.^{5,6,7} Besides recommendations on successive decrease of fat proportion of the total energy intake during the first 2-3 years, guidelines are confined to intakes of saturated fatty acids (FA), *trans* FA, essential fatty acids (EFA) and some of the long chain polyunsaturated fatty acids (LCPUFAs).

Safety and efficacy of probiotics in disease states

Professor Yvan Vandenplas, Universitair Kinderziekenhuis, Vrije Universiteit, Brussels, Belgium, reviewed the role of *probiotics* in health and disease. In the first instance, probiotics are living microorganisms that have, when ingested in sufficiently large amounts from food, a beneficial health effect on the host. He argued that Probiotics used in disease treatment should fulfil the same requirement regarding quality, efficacy and safety as any other "drug". Requirements for claims should be the same for all therapeutic products. The use of a "biotherapeutic agent" for a

probiotic used in treatment could help to clarify the difference between the different classes of probiotic strains. As for any drug development, phase I-II-III-IV studies are mandatory for therapeutic probiotic products. He further added that dose-efficacy studies are needed, because dose-dependent effects have been reported. Since interactions between different strains have as well been reported, any combination of products should be studied.

Speaking about the role of probiotics in the treatment of specific diseases he explained: At this moment, efficacy has been shown in children with acute infectious gastro-enteritis and in the prevention and treatment of antibiotic associated diarrhea (AAD).^{8,9} Although some data are positive in the prevention of atopic dermatitis, data in the treatment of atopic disease in general are negative. Dose-response studies examining probiotics and immunity are urgently required before conclusive recommendations can be made. This is especially since there are indications that certain in-vitro effects are seen only at low bacterial doses and that high doses may produce opposite effects to those obtained at low doses. Lower doses can be more effective than higher doses.

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Notes to editors:

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- partner with the medical and scientific community by providing enhanced access to the latest knowledge in nutritional sciences to enable continual improvement to healthcare of people of all ages
- foster the communication of sound nutrition research by helping to connect the Scientific Community with Nestlé Research.

For more information, please consult www.nestlenutrition-institute.org.

The webinars of this Satellite Symposium are now available on the NNI website: please visit <http://www.nestlenutrition-institute.org/resources/online-conferences/Pages/OnlineConferences.aspx?a=2>

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