The global rise of allergy

The prevalence of allergic diseases such as food allergy, atopic eczema, allergic rinitis and asthma, is rising dramatically worldwide. CMA is one of the most common allergies in infants and young children, affecting up to 5% of the world population.

The importance of the gut microbiota in early life

The immune system develops quickly during the first 1000 days of life; it is well known that both the establishment and maintenance of an immune balance is important for the development of the immune system and essential to maintain health, especially in infants and children.

Environmental factors such as mode of delivery, diet and use of antibiotics influence the infant gut and immune system. These factors can cause an imbalance of the gut microbiota known as dysbiosis, which impairs the development of the immune system, resulting in a state of inflammation and potentially giving rise to allergic diseases. For this reason, targeting the gut microbiota is suggested to be important in reducing the risk or persistence of allergic diseases like CMA.

The gut microbiota of infants with allergic conditions is characterized by low levels of Bifidobacterium and Lactobacillus compared with healthy infants. Human milk contains human milk oligosaccharides (HMOs) and live bacteria that are provided at a critical stage in the early development of the gut microbiota.

The gut microbiota of infants with atopic eczema is further affected by Environmentally Mediated Early Palatability (EMEP). This reinforces the importance of a balanced gut microbiota for allergy prevention and management.

Synbiotics – a promising approach for primary prevention and dietary management of cow’s milk allergy (CMA)

Nutricia presents the final installment in a three-part series of discussions around allerigies in early life. This article focuses on synbiotics, a promising approach for primary prevention and dietary management of cow’s milk allergy (CMA).

Synbiotics are a combination of pre- and probiotics. Pre- and probiotics can influence the immune system and gut microbiota via the gut microbiota, and therefore they may play a role in preventing the onset of an allergic disease. The objective of combining pre- and probiotics is to achieve stronger positive effects than with either component alone (synergy).

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Given the presence and important role of these naturally occurring pre- and probiotics, and oral tolerance via controlled exposure is not always possible, there is a compelling rationale to combine pre- and probiotics (synbiotics) in infant formula so that functionally it more closely resembles human breast milk.

Supplementation with specific probiotic mixtures and probiotic bacteria has been a logical next step in promoting immune system development and balanced gut microbiota as part of strategies for the nutritional management of CMA.

Nutricia believes that optimal prevention and management strategies combine specific prebiotic milk hydrolysates or probiotic bacteria with additional ingredients (such as organic and mineral ingredients). These provide nutritional and environmental conditions in the gut to train the immune system, supporting the natural development of oral tolerance. Protein hydrolysates may contribute to the induction of oral tolerance and can prime the immune system to withstand exposure and prevent an allergic reaction.

Recognizing the importance of a balanced gut microbiota, and building on the increasing evidence of bacterial presence in human milk, Nutricia is supporting a comprehensive research program to investigate the efficacy of a specific synbiotic mixture of prebiotics and probiotics (scFOs/FOS) in preterm infants with CMA (the SYNBAD Study).

The SYNBAD Study (Sponsored Content) confirms the bifidogenic capacity of this synbiotic blend in infants with CMA. In addition, the synbiotic (EHF) reduced AD severity within the subgroup of infants with IgE-associated AD, and improved diaper/nappy dermatitis symptoms. The 1 year follow-up data also showed reduced prevalence of atopic-like symptoms and medication use in infants with AD.

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Synbiotics are safe, hypoallergenic and improve the microbiota of infants with CMA.

Clinical studies have shown that an AAF with synbiotics is hypoallergenic, well tolerated and supports normal growth in both healthy and CMA infants. The ASSIGN study investigated the effects of an AAF including synbiotics (scFOs/FOS/B. breve M-16V) on percentages of Bifidobacteria and Eubacterium rectale/Clostridium cocoides (ER/CC) in feces from infants with suspected non-IgE mediated CMA. Both healthy breastfeeding and formula-fed reference groups were also collected. An eight week intervention with an AAF with these specific synbiotics was shown to lead to increased levels of infant-like Bifidobacteria and decreased "adult-like" ER/CC compared to an AAF without synbiotics. These bacterial changes approximated the levels in the healthy breastfed group. This supports the hypothesis that an AAF with synbiotics improves the fecal microbiota of infants with suspected non-IgE mediated CMA.

The ongoing PRESTO study includes infants with confirmed IgE-mediated CMA, randomly allocated to receive the same AAF with or without synbiotics. The primary outcome measure is the fetal tolerance acquisition over 12, 24 and 36 months. This trial will inform future studies primarily focusing on the clinical outcomes in the specific CMA populations.

Synbiotics as a promising approach for CMA

A growing amount of clinical evidence shows that pre- and probiotics can have beneficial effects in infants at risk of, or living with food allergies. Pre- and probiotics can have beneficial effects in infants at risk of, or living with food allergies.

Traditional strategies for the dietary management of food allergies include extensively hydrolysed formula (EHF) or amino acid formula (AAF) have been successful, with most studies showing symptom resolution and achieving oral tolerance with time. However, risk factors such as age at first exposure and a lack of research on the possibility to further develop effective tolerance to allergens in prevention and dietary management strategies.

Nutricia has undertaken an extensive clinical research program to support the safety, tolerability and efficacy of the synbiotic concept: a new way to reduce the incidence and persistence of allergic diseases like CMA.

Future of allergy management for CMA patients

The dramatic increase in allergic disease requires a new focus on strategies for the primary prevention and dietary management of food allergy. Increasing insights into the importance of the gut microbiota for overall health and targeting the gut microbiota appears to be a logical next step in promoting immune tolerance to allergens.

Nutricia believes that there is a strong rationale for including synbiotics in the diet of these infants and has an extensive clinical trial program underway investigating the role of these ingredients in the primary prevention and dietary management of CMA.

Nutricia continues to collaborate with global experts to further its understanding of the impact of nutrition on food allergy.

For more information visit www.nutriciaresearch.com/allergy/