

Prescribing infant formula to allergic babies

Lombard MJ, PhD, NICUS Manager/Registered Dietitian; Labuschagne I, BSc, Principal Dietitian
 Van Niekerk E, MSc, Lecturer, Stellenbosch University
 Nutrition Information Centre Stellenbosch University (NICUS), Division of Human Nutrition
 Department of Interdisciplinary Health Sciences, Faculty of Health Sciences, Stellenbosch University
 Correspondence to: Martani Lombard, e-mail: martani@sun.ac.za
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Abstract

Exclusive breastfeeding and postponement of complementary foods to four to six months of age are recommended for the prevention of food allergies. However, many infants receive formula milk for a number of reasons. Various types of formula are indicated to prevent or treat allergy and food intolerance.

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Introduction

There is evidence that exclusive breastfeeding of babies for at least four months, compared with feeding babies formula that is made with intact cow's milk protein, prevents or delays the occurrence of atopic dermatitis, cow milk allergy, and wheezing in early childhood.¹ There is little evidence that delaying the timing of the introduction of complementary foods beyond four to six months of age prevents the occurrence of atopic disease.¹ Although an increased exclusive breastfeeding duration reduces the incidence of childhood allergy,^{2,3} many infants are either weaned from breast to formula milk, or receive formula to supplement breast milk.⁴ Usually, formula is either adapted cow's milk or soy-milk based, and this results in an increased risk of allergy or food intolerance.⁴

The most common allergic conditions that affect infants are allergic rhinitis (hay fever), asthma, atopic dermatitis (eczema) and food allergies.⁴ Measures to prevent allergy and food intolerance include exclusive breastfeeding,² and the avoidance of potential allergens during the first year of life.⁴ The avoidance of allergens during pregnancy⁵ and lactation⁶ is still under debate.⁷

Recommended infant formula that aims to prevent and treat allergy and food intolerance includes hydrolysed cow's milk, elemental formula, and adapted soy or hydrolysed soy formula.⁴ In studies of infants at high risk of atopy, and who are not exclusively breastfed for four to six months, there is modest evidence that the onset of atopic disease may be delayed or prevented by the use of hydrolysed formula, compared with formula that is made with intact cow's milk protein, particularly in the case of atopic dermatitis.¹

Extensive research has also been conducted on the inclusion of pre- and/or probiotics to infant formula. The aim of this paper is to provide a short, evidence-based overview of different infant formula and its effectiveness in preventing infant allergies.

Hypoallergenic formula

Formula is classified as hypoallergenic when the protein in the formula is either treated with enzymatic hydrolysis and heat treatment and ultrafiltration (hydrolysed protein infant formula) or when it is based on amino-acid mixtures (elemental formula).⁸

Hydrolysed protein infant formula

Partially hydrolysed, whey protein formula reduces the incidence of infant allergy,⁹ especially certain atopic manifestations,¹⁰ but should not be prescribed to prevent allergies in preference to breast milk.⁹ However, a recent systematic review reported a significant reduction in infant allergy with the use of hydrolysed formula, compared to intact cow's milk formula.⁹ It should also be mentioned that partially hydrolysed protein formula is not classified as hypoallergenic. Therefore, it should not be prescribed to infants with diagnosed allergies.¹¹ Table I provides a list of infant formula that is prescribed for the prevention of allergies.

Formula, such as partially hydrolysed protein formula that aims to prevent allergies, has a very low allergenic activity. To date, no firm criteria have been set to determine the design of hypoallergenic formula. If exclusive breastfeeding for four to six months is not possible, high-risk infants [infants with at least one first-degree relative (a parent or

Table I: Available infant formula in South Africa for the prevention and treatment of allergies

Class	Indication for use	Brand name
Partially hydrolysed cow's milk formula	Prevention of cow's milk and other allergies (0-6 months)	Nestlé: Nan HA 1® (new)
	Prevention of cow's milk and other allergies (6-12 months)	Nestlé: Nan HA 2®
	Prevention of allergies (0-12 months)	Abbott: Similac Advanced HA®
		Pharmaco: Novalac HA®
Extensively hydrolysed formula	Diagnosed cow's milk allergy	Aspen: Infacare Nurture HA Comfort®
		Nestlé Alfaré®
		Abbott Similac Alimentum®
		Pharmaco: Novolac Allernova®
Free amino acid-based formula	Highly allergic infant	Nutricia: Neocate®
	Highly allergic infant (> 1 year)	Nutricia: Neocate advanced®

sibling with documented allergic disease)]¹ should ideally be fed a hypoallergenic formula and this should be combined with the avoidance of solid foods during the first four to six months.⁸ At present, there are insufficient data to document a protective effect of any dietary intervention beyond four to six months of age for the development of atopic disease.¹

Formula that contains extensively hydrolysed protein is recommended in the presence of a confirmed allergy (Table I).¹¹ However, extensively hydrolysed protein formula has a higher protein content, higher osmolality, is costly, and is not always well tolerated by infants.⁹

Elemental formula

Elemental formula is formula with free amino-acid-based protein. It is prescribed to infants with diagnosed allergies.¹¹ Infants with non-immunoglobulin E (IgE)-mediated, food-induced gastroenterocolitis-proctitis syndromes, with failure to thrive, severe atopic eczema, or with symptoms that are present during exclusive breastfeeding, are more likely to benefit from elemental formula than extensively hydrolysed formula. This is especially so since intolerance to extensively hydrolysed formula may occur. However, currently, it is not recommended that allergic infants are fed elemental formula as the initial treatment because of its cost.¹²

Soy formula

Soy protein may also cause allergies, and some infants are allergic to both cow's milk and soy protein.¹³ Currently, the European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) recommends the use of extensively hydrolysed proteins, rather than soy-protein formula to treat cow's milk protein allergy.¹⁴ ESPGHAN further recommends that soy-protein formula should only be given to children who are older than six months of age, and when soy-protein formula is used for therapeutic use (after the age of six months), tolerance should be established first with a clinical challenge.¹⁴

High-risk infants do not benefit from soy formula that aims to prevent allergy or food intolerance. However, the authors of the systematic review reported that a beneficial effect could not be excluded because of the methodological limitations of the included studies.⁸

Because soy-protein-based formula has a range of disadvantages, such as a high phytate, aluminium and phytoestrogens content, it is recommended that this formula is only prescribed in specific instances, including severe persistent lactose intolerance and galactosaemia, as well as religious, ethical, or other circumstances that specify the avoidance of cow's milk-based formula.¹⁴

Prebiotics and probiotics

Currently, there is no consensus on the use of prebiotics to prevent allergic disease or food hypersensitivity in infants.¹⁵

A recent systematic review also reported insufficient evidence to recommend the addition of probiotics to infant feeds to prevent allergic disease or food hypersensitivity. In the review, no significant difference was found regarding gastrointestinal manifestations of food allergy, asthma, allergic rhinitis, cow's milk protein hypersensitivity, cow's milk protein allergy, and urticaria for formula containing probiotics. However, a significant reduction in infant eczema was reported.⁴

Conclusion

Exclusive breastfeeding and the introduction of complementary foods at four to six months of age are recommended to prevent food allergies. However, many infants still receive either adapted cow's milk- or soy-milk-based formula, which may result in an increased risk of allergy or food intolerance. Partially hydrolysed protein formula should be prescribed to prevent allergies, while extensively hydrolysed formula and elemental formula should be prescribed in the presence of diagnosed allergies. Because soy-protein formula can also cause allergies, it is recommended that these are not prescribed to infants who are younger than six months of age. Currently, there is insufficient evidence to support or refute the use of prebiotics and probiotics to prevent allergic disease or food hypersensitivity in infants.

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