Hydrolyzed & plant-based formulas

How the game is changing

Einerhand Science & Innovation

Website: www.esi4u.nl   E-mail: info@esi4u.nl
How the infant formula landscape is changing

Hydrolyzed formula

Infant formula

Allergen avoidance

Dairy based

For infants with allergies

For healthy infants
The prevalence of allergies is steadily rising

- 30-40% of the world’s population is now affected by one or more allergic conditions\(^1,2\)
- cow’s milk protein allergy is the most common cause of food allergy in infant affecting 2-7% of infants\(^3\)

The most popular hypothesis that explains the rise of food allergies is the **hygiene hypothesis**

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Breast feeding
Infant formula

Hypo-allergenic formula
Partially hydrolysed protein

Hypo-allergenic formula
Extensively hydrolysed protein

Amino Acids

Current dietary management based on allergen avoidance

Prevention
Babies at risk
Moderate allergies
Severe allergies
How the infant formula landscape is changing

Hydrolyzed formula

Tolerance induction

Allergen avoidance

Science drivers

Regulatory drivers

For infants with allergies

Flohr et al 2014, Allergy 69, 56-61
Tolerance induction during the neonatal window of opportunity
Identification of tolerogenic peptides in hydrolyzed formula

Cow’s milk protein

Our hydrolysis process breaks down the milk protein into peptides

Specific peptides with the potential to support immune tolerance development are identified in our pHF.

REDUCE allergenic peptides to reduce allergy response

KEEP tolerogenic peptides to support immune tolerance

New regulations

• Infant formula and follow-on formula (Regulation 2016/127)
  – By 2020, DHA added must be at least 20 mg for every 100 kcal for all formulas intended for infants from the moment of birth

• Food for special medical purposes (FSMP Regulation 2016/128)
  – The regulation states a greater flexibility with the creation of innovative products as long as they are proven to be innocuous, beneficial and effective for their addressees on the basis of generally accepted scientific data.

• Regulation governing specific infant formulas containing protein hydrolysates.
  – In 2021, new requirements regarding the composition of protein hydrolysates
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- Plant based

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Plant-based formulas are trending for a better world

PLANT BASED FOOD SALES – 20% up over the last year*

- Consumers are increasingly aware of health benefits of plant-based foods
- Also animal suffering and environmental problems make them switch to plant-based foods
- Millennials make up the largest of the vegan population = parenting age
- According to a recent study of 2,177 parents of children aged 0-12 in the UK:
  - growing number of vegan parents in the UK
  - 1 in 12 parents currently raise their children vegan for health purposes


Some market studies suggest that vegetarians constitute 7% to 11% of the UK adult population (4 million people)
Soy has traditionally been used as dairy free

- Soy has traditionally been used as dairy free formula, but still often contains Vit D3 coming from animal source (not vegan)
- Soy not suitable for allergic babies
- Often plant-based proteins (e.g. rice) are do not have the right amino acid profile
Rice and soy based formulas – 100% plant-based

Infant formula

Young child formula
Nestle will launch a new vegan infant formula

The vegan baby formula, which will be suitable for all babies under the age of twelve months, is suitable for vegans, and children who suffer from cow’s milk allergies also.

- Potato protein microparticles and is naturally hypoallergenic and cost effective to produce*
- Alternative protein because of cow’s milk protein allergy
- Potato for 50-90% of the protein and the additionally pea protein, quinoa, oat, sunflower or coconut for remaining*
- Rice and soy protein are nutritionally or allergen wise not good enough
- Minimally processed in contrast to the highly processed hydrolysed proteins, good taste and low cost*

*Nestle patent WO2018

Potato protein contains more essential amino acids compared to rice protein

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<th>Amino acid</th>
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Latest non-dairy non-soy formula

World's first 100% Vegan Non dairy No soy infant formula

Israeli start-up INDI
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Microbiome

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Human milk OS

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Plant OS

Plant fibers

For healthy infants
Evolution of bifidobacteria levels throughout lifespan

Interventions with Pre- and probiotics

Allergy and gut dysbiosis

Human Milk Oligosaccharides may help to reduce risk of allergy

- Experimental data suggests that HMOs reduce risk*
- HMO composition in human milk is associated with the development of food sensitization in the first year of life**
- Clinical study underway testing HMOs for allergy management***

* Castillo-Courtade et al, Allergy. 2015 Sep;70(9):1091-102.
** Miliki et al, Allergy. 2018 Oct;73(10):2070-2073
*** https://clinicaltrials.gov/ct2/show/NCT03085134
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Intestinal I-Chip analysis (TNO-Zeist) was performed to analyze bacterial species.
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Thank you for your attention

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