HYDROLYSATES AND COW MILK ALLERGY

*Adopted from 2012 Lifestages webinar “It’s all about growth”*

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COW’S MILK ALLERGY IN INFANCY HAS SERIOUS IMPACT ON MOTHER AND CHILD

Cow’s milk allergy is an immunological reaction whereby the body *mistakenly* perceives milk protein as harmful.
FOOD HYPERSENSITIVITY

Food hypersensitivity

Non-allergic hypersensitivity
Intolerance

Allergic hypersensitivity

IgE mediated

Non-IgE mediated

e.g. lactose intolerance
SENSITISATION AND ALLERGIC REACTION

First contact with the food allergen

Next contact with the food allergen

Intestinal wall

Antigen presenting cell

T cell → B cell → IgE → Mast cell

Inflammatory mediators → Clinical reactions
SENSITISATION AND ALLERGIC REACTION

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Sensitisation
HOW TO REDUCE THE RISK OF CMA?

Postponing the contact with intact cow’s milk protein is effective

*Breast milk is the first choice, also in the prevention of CMA*

Low allergen load & Immune active substances to protect digestive tract
HOW TO REDUCE THE RISK OF CMA?

When breastfeeding is not an option:

Cow’s milk hydrolysate-based formulas

Hydrolysis of proteins reduce the allergenic potential
WHAT ARE HYDROLYSATES?

Proteins digested into smaller fragments (peptides) and/or their sole building blocks (amino acids)

Levels of hydrolysis
- Mildly hydrolysed
- Partially hydrolysed
- Extensively hydrolysed
HYDROLYSIS REDUCES THE ALLERGENIC POTENTIAL

• Many potential epitopes in all milk proteins

• Cross-linking of two IgE antibodies by epitope binding is necessary for allergic reaction

• Enzymatic hydrolysis destroys both linear and structural epitopes

→ Most effective mode to reduce the allergenicity of a protein
CHARACTERISING HYDROLYSATES

Hydrolysate characteristics

- MW Distribution
- Peptide Fingerprinting
- AN and TN
- Degree of hydrolysis
- SDS-PAGE
- Amino acid profile
- Taste
- LC-MS and Maldi-TOF analysis
CHARACTERISING HYDROLYSATES

Allergenicity analysis

- ELISA
- Mast cell degranulation test
- Animal sensitisation study
- Clinical study in infants