

Allergenic versus tolerogenic properties of cow's milk-based hydrolysates

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Aim and Description:

Hydrolysed infant formulas for children with food allergy or children with a high risk of cow's milk allergy are produced in two different ways: nearly all protein is broken down to very small fragments (extensively hydrolyses) or proteins are broken down to larger fragments (partial hydrolyses). The immune system may react to food proteins in two very different ways. i) The protein is seen as dangerous and the person is sensitised i.e. has developed allergy. ii) The protein is seen as harmless and tolerance is developed. The extensively hydrolysed formulas are produced to prevent any allergenicity. This at the same time removes the beneficial ability of the hydrolysed formula to induce tolerance. The partial hydrolysed formulas are produced to prevent the development of allergy and promote the development of tolerance. There is at present only limited knowledge about which protein and peptide characteristics that promote allergy and which that promote tolerance. To develop a knowledge based strategy for the development of new and improved hydrolysed infant formulas insight into the characteristics of milk hydrolysates promoting allergy and the characteristics promoting tolerance is needed. We will develop animal models for tolerance inductions as counterparts to our models for sensitisation. We will use these models to study which characteristics of milk hydrolysates that are connected to the ability i) to sensitise, ii) induce tolerance in individuals that are not milk allergic, and iii) change sensitisation to tolerance. This project will generate knowledge that can be used to improve hydrolysed cow's milk formulas to enable them not to induce allergy and at the same time promote the development of tolerance. The data may also be used in the strategy to develop a safe strategy for oral immune therapy.