

HYPOALLERGENICITY TESTING



TNO innovation
for life

Avoidance of offending foods is the only management strategy for food-allergic individuals. This can be done by eliminating the offending food from the diet, or by modifying or removing the allergenic proteins that give rise to the allergy. These altered, hypoallergenic foods may be a safe alternative for the food-allergic consumer or the consumer at risk to develop a food allergy. TNO offers a range of innovative, integrated methods to test the residual allergenic potency of hypoallergenic ingredients and products and provides risk assessment and regulatory affairs support in product development.

TNO CONSULTANCY

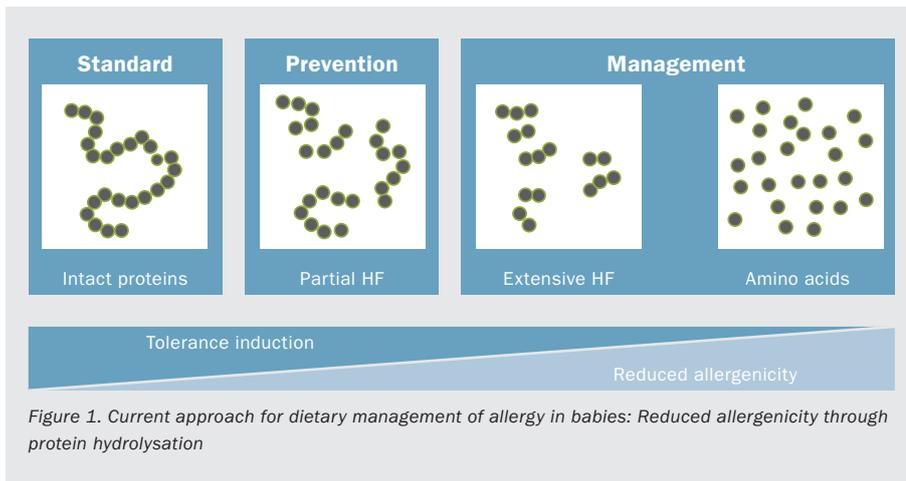
The safety and regulatory compliance of food and feed products should be warranted and documented throughout their lifecycle, which includes the safety with respect to food allergy. To this end TNO, in close consultation with their clients, performs evaluations covering allergic hazard identification, exposure assessments and risk assessment. State of the art product characterization, data mining and evaluation techniques available at TNO can yield a non-testing or minimal testing approach to food allergy risk assessment. And if necessary TNO can offer further testing of the products to support market introduction.

HYPOALLERGENIC INFANT FORMULAE

Cow's milk based infant formulae are an important alternative to breast milk. Although most children benefit from standard cow's milk-base formulae,

some infants are allergic to the intact cow's milk proteins. For these allergic infants formulae have been developed based on hydrolysed cow's milk proteins, which retain the high nutritional quality of the proteins, but have lower allergenic potential.

The properties of hypoallergenic infant formulae can vary due to the degree of protein hydrolysis and are designed to target primary (sensitization) or secondary (triggering) allergy prevention (Figure 1). The term hypoallergenic refers to the significant reduction or elimination of known allergenic milk epitopes in the protein sequence or 3D structure. TNO offers a strategy using *in vitro* and *in/ex vivo* models to assess residual allergenicity and the preventive effect of hydrolysed infant formulae.



These procedures can be performed in compliance with the guidelines for Good Laboratory Practice (GLP) and conform to current legislation.

HYPOALLERGENIC FOOD INGREDIENTS/PRODUCTS

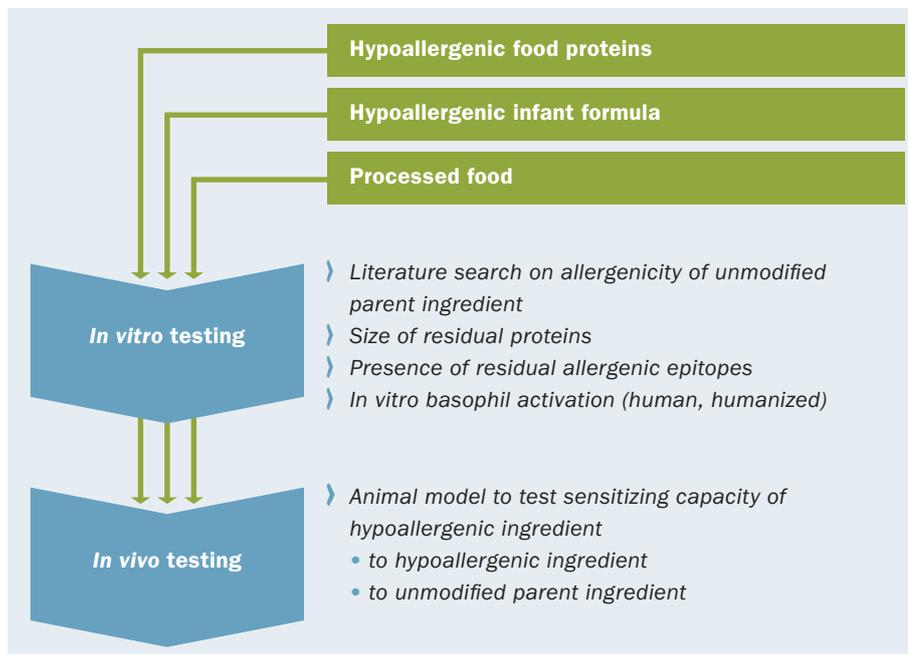
There may be many reasons to introduce hypoallergenic proteins in your product such as improving some functional properties (e.g. nutritional additives, food texture enhancers, pharmaceutical ingredients) or preventing allergic responses in sensitive individuals. In contrast to hypoallergenic infant formula, current legislation does not specify how the hypoallergenic assessment should be performed for new products with regards to food allergy risks. Several tests are available to study the allergenicity of products, but often the food industry does not know which

testing methods will prove that their product offers minimal allergenic properties.

TNO's advanced, tailor-made testing procedure gives insight into the potential residual allergenicity of these hypoallergenic products and includes state of the art *in vitro* challenge tests and *in vivo* sensitization test methods. If none of the tests indicate a hazard, it is unlikely that the hypoallergenic product/ingredient has an allergenic potential.

This assessment gives manufacturers valuable insight during product development and might reduce the time-to-market for new products. Moreover, it creates an opportunity to screen for proteins (sources) with the lowest allergenic potential and to change procedures early in the development phase of a new product.

APPROACH TO DETERMINE THE RESIDUAL ALLERGENICITY OF A HYPOALLERGENIC PRODUCT/INGREDIENT



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HEALTHY LIVING

TNO Initiates technological and social innovation for healthy living in a vital society.

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