

# Food & Nutrition

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## A formula for tolerance to cow's milk protein allergy

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Cow's milk protein allergy (CMPA) is the most common food allergy associated with infants and can affect 2-3% of children worldwide. Persisting CMPA can lead to asthma, allergic rhinitis and anaphylaxis in later life. Strict cow's milk protein avoidance has been the standard therapy of CMPA in children, but oral immunotherapy (OIT) seems to provide an alternative treatment. OIT results in avoidance of the clinical symptoms of allergy by providing the infant with hydrolyzed proteins that lack the IgE binding epitopes. OIT can result in tolerance which enables the mucosal immune system to remain in a non-activated state when it encounters harmless food proteins, such as cow's milk, while retaining its ability to mount an immune response to a potential pathogen. The aim of this project was to identify novel bovine milk-derived protein hydrolysates that can modulate the immune response away from an allergic type 2 helper T-cell (Th2) response and more towards a regulatory T-cell phenotype, which allows the immune system to develop oral tolerance. To date, candidate hydrolysates have been selected based on their anti-inflammatory and allergy suppressing activity in *in vitro* studies. Their anti-inflammatory effects have been further assessed and confirmed in an *in vivo* murine model of acute inflammatory disease. These hydrolysates could potentially be useful in the setting of allergic inflammation to help attenuate the symptoms associated with an allergic response. In order to now determine the capacity of these hydrolysates to induce oral tolerance to intact cow's milk, they will be tested in an *in vivo* murine model of food allergy. The study of how these hydrolysates modulate the immune system *in vivo* could have potential benefits to other life threatening food allergies. The outcome of this project is hoped to improve the nutrition, health and quality of life of infants, by improving the composition of infant milk formulas with the addition of novel functional hydrolysates.

### Biography

Niamh Hunt has completed her degree in Genetics and Cell Biology from Dublin City University (DCU), Ireland. She is currently in her final year of PhD, under the guidance of Professor Christine Loscher in DCU, as a part of Food for Health Ireland's (FHI) Phase 2 project. Her role within the Infant Nutrition Research Group involves identifying novel compounds with beneficial immunomodulatory properties which will go on to be tested in food allergy model systems in order to assess the ability of these compounds to induce tolerance in infants with cow's milk protein allergy.

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