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Local anaphylactic response as studied in murine model of allergy: The *BALB/c* sensitised to bovine lactoprotéins after a preventive diet based on hypoallergenic milk formula

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Abstract

Allergy to cow's milk protein is the most common food allergies in children since they are the first bovine proteins ingested by the infant. In 50% of cases, cow's milk allergy occurs before the age of 1 year and in 92% of cases before the age of 5 years. It is clinically manifested by symptoms and digestive extradigestifs disappear shortly after the exclusion of cow's milk.

Four milk proteins are classically recognized as responsible for the allergy to β -lactoglobulin (β -lg), the α -lactalbumin (α -la), casein and bovine serum albumin (BSA) and there would be concomitantly reduced capacity digestibility of protein in cow's milk and can be linked to a change in the permeability of the intestinal mucosa vis-à-vis the epithelial transport. This is why the treatment as a prevention research are point events. They are based on protein hydrolysates, the respective indications are based on their immunological characteristics and their risks of allergic reactions. The multiplicity of products requires knowledge of their characteristics leading to a classification into two types: partial hydrolysates extensively hydrolyzed formulas. However, the mechanism by which extensive or partial hydrolysates contribus prevention of allergy to cow's milk proteins and food proteins in general remains unknown. This lack of knowledge is mainly due to the difficulties of the experimental approach to the study of this disease.

During weaning, the infant incurs significant nutritional risk and it is during this period that more or less quickly, the cow's milk comes to supplement or replace breast milk. Why the use of hypoallergenic milk can be a means of preventing allergy to cow's milk proteins in infants with atopy.

The aim of our work is to study the local intestinal response in Using chamber in *BALB/c* sensitized to bovine milk proteins after a preventive diet based on hypoallergenic formula milk marketed. 30 female mice *BALB/c* divided into three groups are used. The first batch (n = 12) received normal milk formula "Aptamil" and immunized to the β -lg and α -lac. The second batch (n = 12) receiving the milk hypoallergenic "Aptamil" and immunized against the previous two proteins. The third group (n = 6) don't received any experimental diet and immunized with the β -lg and α -lac. This batch is a negative control group. The anaphylactic reactions are evaluated by the mesurement of the electrophysiological parameters: current of short-circuit (I_{sc} , $\mu A/cm^2$), potential difference (DDP, mv), and conductance (G, mmho).

Keywords: Balb/c mouse, cow's milk allergy, β -lactoglobulin, α -lactalbumin, hypoallergenic milk, Ussing chamber.