

Chymotryptic and tryptic hydrolysis of whey proteins camel: Study of the antigenicity / allergenicity of hydrolysates in *BALB/c* mice

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Abstract

Introduction: The proteins of the animal specie and cow's milk certain can involve allergic reactions in particular in the predisposed young child. The beta lactoglobulin (β -Lg) and lactalbumin (α -La) are to it two the most accused proteins of the whey. Preceding studies showed that the consumption of the milk of dromedary causes a reaction crossed with proteins of the cow's milk. On the other hand, the hydrolysis of proteins of the milk of the two species attenuates their antigenicity/allergenicity.

Accordingly, we carried out the tryptic and chymotryptic hydrolysis of proteins of the whey of the dromedary and cow's milks. The residual antigenic activity of the hydrolysats obtained is measured by ELISA, while the allergenicity is evaluated *in-vitro* in Ussing chamber on the intestinal mucosa of *BALB /c* mice sensitized to the β -Lg and α -La from cow's milk.

Materiels and methods:

- 1 - Preparation of milk whey camel and cow's milk : Obtaining whey.
- 2 - Protocol enzymatic digestion *in-vitro* camel milk whey and cow: Hydrolysis of whey.
- * Measurement of the enzymatic digestion *in-vitro* (α -NH₂ functions).
- *Electrophoresis on polyacrylamide gel in the presence of SDS: Electrophoresis hydrolysates.
- 3 - Immunization by cow's milk protein (β -Lg and α -La) intraperitoneally on Balb / C.
- 4 - Evaluation of degree of sensitization of animals: Measurement of antigenicity by ELISA.
- 5 - Study of the allergenicity of whey hydrolysates camel milk and cow: Evaluation of allergenicity in Ussing chamber.

The results obtained show that:

The total protein rate of the whey of dromedary is higher than that of the cow's milk. The whey of the milk of dromedary is more sensitive to the action of the pancreatic enzymes than that of the cow's milk. Electrophoretic profile of the hydrolysats watch the absence of the β -Lg in the whey of the milk of dromedary and which it is quickly degraded by the two pancreatic enzymes. The whey of the cow's milk resists the hydrolysis better.

The residual antigenicity of whey hydrolysates dromedary milk vis-à-vis IgG α -La is reduced by reactivity against the hydrolysates with β -Lg IgG is comparable to that of the control.

in-vitro tests show that hydrolysates cause an increase in Isc accompanied by an increase in conductance.

In conclusion, Camel milk is rich in protein and is susceptible to hydrolysis pancreatic enzyme (trypsin and chymotrypsin). Both enzymes reduce the antigenic reactivity of milk hydrolysates vis-à-vis the IgG α -La; it could be a model for the treatment of allergy to cow's milk proteins (CMPA).

Keywords: Antigenicity , Allergenicity , Chymotrypsin ,Cow's milk, Milk of dromedary, Trypsin , Ussing chamber.