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Pepsin hydrolysis of bovin β-lactoglobulin under microwave reduce its allergenicity as studied *ex vivo* in murine model of allergy

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The purpose of this study was to evaluate the impact of a physical treatment by microwave combined with enzymatic hydrolysis using pepsin on their allergenicity of bovine whey protein β-lactoglobulin (BLG) in murine animal model of allergy: BALB/c mice.

The different effects of microwaves on the peptic hydrolysis of the β-lactoglobulin (BLG) a major milk allergen was assessed by SDS-PAGE and by eletrophoretic bands densitometry. In addition, the existence of local anaphylaxis have been studied *ex vivo* after intestinal fragments stimulation of BALB/c mice mounted in Ussing chamber with bovine whey peptic hydrolyzates produced under microwave. The results show that microwave treatment accelerates peptic hydrolysis of BLG after 3 minutes only under microwave treatment at 200 Watt as demonstrated by SDS-PAGE electrophoresis (Figure 1-A) obtaining 56% of protein hydrolysis ($p<0.001$ *vs* under conventional heating) as measured by eletrophoretic bands densitometry (Figure 1-B). In Ussing chamber, stimulation with peptic bovine whey hydrolyzates obtained under microwaves (200 Watts) produced no increase in short circuit current (Isc) compared to those obtained in the conventional conditions ($p<0.001$), reflecting the presence of local intestinal anaphylaxis (Figure 2).

The results obtained of enzymatic hydrolysis carried out under microwave are very encouraging and interesting reporting on the possibility of using microwaves as physical treatment to destabilize the protein which are more resistant to enzymatic digestion and ability to reduce their allergenicity.

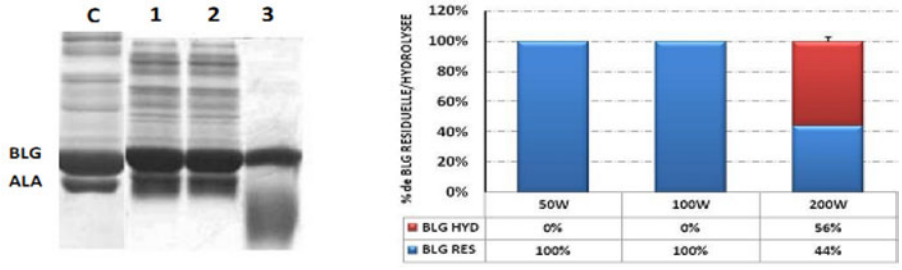

Figure 1. (**A**): SDS-PAGE of bovine BLG peptic hydrolysis under microwave at 50 (*1*),100 (*2*) and 200 Watts (*3*); (**B**): % of BLh hydrolysis as measured by SDS-PAGE densytometry.

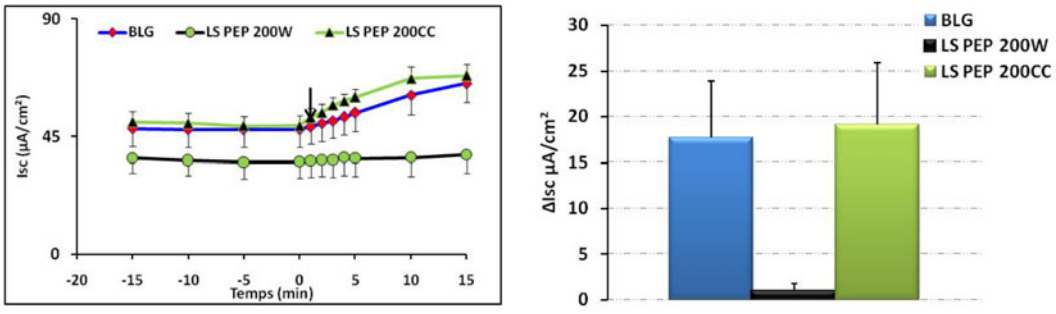

Figure 2. Intestinal anaphylactic response as indicated by Cl- secretion (*Isc*) measured in ussig chamber.