EFFECT OF POLYMERIZATION ON β-LG STABILITY TO GASTRIC DIGESTION AND ANTIGENICITY OF THE HYDROLYSATES

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β-Lactoglobulin (β-Lg), the most abundant protein in whey, is resistant to gastric digestion, a common characteristic of antigenic proteins. Polymerization by the enzyme transglutaminase (TG) has been studied as a strategy to reduce the antigenicity of this protein. This work evaluated the effect of bovine whey protein isolate (WPI) polymerization on β-Lg susceptibility to gastric digestion and antigenic potential. Dispersions of native (7% w/v) (WPI N-TG) or heat treated WPI (WPI HT-TG; 72°C/22 min) were treated with TG (36.3 U g⁻¹ protein) for polymerization. The samples were subjected to in vitro gastric digestion using adult (182 U pepsin g⁻¹ protein, pH 2) or infant gastric conditions (23 U pepsin g⁻¹ protein, pH 4); untreated WPI was used as a control. Samples were characterized by SDS-PAGE electrophoresis under reducing conditions and the antigenicity by ELISA, using sera from BALB/c mice sensitized with β-Lg. β-Lg showed high stability to gastric digestion after the treatments, however electrophoretic patterns suggest that the digestion of samples were more effective under adult digestion conditions compared to infant conditions. Regarding the antigenic response, there was no significant difference (p <0.05) between treated samples and the control after digestion under adult conditions. Under infant conditions a decrease in the antigenic response of WPI HT-TG (86.44 μg IgE ml⁻¹) compared to control (120.80 μg IgE ml⁻¹) was observed. Results obtained indicate that heat treatment of WPI followed by polymerization with TG is able to reduce moderately the antigenicity of β-Lg.