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Biological activity of peptides derived from milk proteins

Alba Ardura Gutierrez
University of Oviedo, Spain

Nowadays, a massive investigation effort is executed for alleviating the effects of diabetes and obesity, with all negative impacts they present to the human health and welfare. We used Trypsinogen digestion for Bovine Serum Albumin (BSA) and Beta-lactoglobulin (β -Lg) the major mammalian milk protein, to release several peptides. One octamer peptide derived from BSA, DLGEEHFK, and one hexamer derived from β -Lg, VAGTWY, were assayed for biological activities *in vitro*, and the significant one was assayed *in vivo*.

Different biological activities were tested:

- Anti-diabetic activity
- Lipid metabolism
- Lipid fractions

The two proteins and their derived peptides exhibited different DPP-IV inhibitory activity *in vitro*. The best results were obtained for the β -Lg-related peptide. For *in vivo* assays, two different doses of the VAGTWY peptide significantly increased mRNA levels of the two assayed genes. The two doses of the peptide reduced triglycerides in liver of zebrafish significantly. However, the low dose only reduced free liver cholesterol. Also, only the high dose increased liver HDL cholesterol significantly. The results in general indicated good anti-DPP-IV and anti-lipid accumulation of the investigated β -Lg-derived peptide. The current results showed that the biological activities of the milk seem to be related to the gut-acidic liberation of its short peptides. More work may be necessary for revealing the biological activities of the peptide we investigated and other peptides that reside compacted within the highly complex milk proteins consortia.

Biography

Alba Ardura Gutierrez has completed her PhD from Oviedo University after her Master in Food Biotechnology. Nowadays she is a postdoctoral student in the University of Perpignan, France; working in the early detection of invasive species. At the same time she continues working in food issues: mislabeling, biological properties of milk peptides and Asturian cider components. She has published 13 papers in reputed journals about different issues: genetics, conservation, invasive species and food issues.

alarguti@hotmail.com

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