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Bioactive components from protein hydrolysate: The health benefits of casein peptides

Interest in bioactive compounds from food in general is on the increase especially for their health benefits. Most of the bioactive compounds are naturally present in foods or could be released from food components, such as protein, as a result of hydrolysis by digestive enzymes. Our research work investigated the release of some of the bioactive peptides from different milk proteins, especially caseins. These peptides varied in length and in their amino acid sequence. The health benefits of the crude hydrolysate and some of its fractions isolated after size exclusion chromatography and RP-HPLC were compared with the unhydrolysed casein. The molecular weights of these fractions ranged between 1kDa up to 10kDa and the health benefits included their effect as antihypercholesterolemic and antihypertensive agents as well as for their antioxidant activities. In all these cases there were noticeable effects when these peptides were compared with the control unhydrolysed caseins. The in vitro studies showed a 78.5% reduction in cholesterol, a 50% in ACE inhibitory activities and 19.6% in antioxidant activity. Further investigation for the bioactivity of some special peptides produced from specific milk protein fraction such as β-Casein was undertaken for their potential as anticarcinogenic compound. The initial results indicated a slight but not significant reduction in the proliferation of colonic and pancreatic cancer cell lines. However, the research is encouraging and further examination is ongoing to improve their potential.

Biography

Ara Kanekanian gained his Ph.D. from Reading University-UK in 1983. He has been in academia for over 20 years with main interest in protein chemistry and fermentation technology. He has also been working for 10 years in the food industry and undertook several consultancy and turnkey projects related to food and dairy processing within Europe and the Middle East. He is a member of the publication committee of the International Journal of Dairy Technology and has published several scientific and technical papers. Other research activities include milk allergy, immune modulation and growth factors in colostrum, micro- and nano-encapsulation of nutraceuticals. Currently, he has been participating in several European projects regarding bioactive compounds in food for their health benefits as antioxidants, anti-inflammatory, antihypercholesterolemic, antihypertensive and anticarcinogenic agents. He is also editing a book titled “Milk and Dairy Products as Functional Foods” commissioned by the Society of Dairy Technology-UK to be published by Wiley-Blackwell in 2013.

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