Effect of Gastrointestinal Protease Digestion on Bioactivity of Marine Peptides

Focus in nutritional science has turned towards components in, or added to, foods that may possess health beneficial activities beyond the classical nutritional value, namely functional food. Bioactive peptides are examples of such components. In vitro studies on bioactivities have mainly been executed without concerning subsequent digestion after intake and the aim of this work was hence to investigate how the in vitro antioxidative, antihypertensive and caspase activating activities of peptides are affected by digestion with gastrointestinal (GI) proteases. Five different fish protein hydrolysates were chosen to study the effect of in vitro digestion on bioactivity. The protein concentration decreased in all samples during digestion and the molecular weight distribution of the peptides shifted towards lower values. Thus, in vitro digestion with GI proteases resulted in a further degradation of the peptides obtained by hydrolysis. The antihypertensive effect increased in all samples after digestion with GI proteases whereas the antioxidative capacity decreased. The effect on the caspase activity depended on the proteases used in the preparation of hydrolysates. In conclusion, the caspase activity and antihypertensive activity are maintained during digestion with GI proteases, while the antioxidative capacity seems to be reduced.