Resistant peptides to in vitro gastrointestinal digestion of casein and whey proteins with brush border peptidases

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INTRODUCTION

It is known that specific peptides are likely behind several physiological effects observed for dietary proteins and demonstration of their survival in the digestive tract is essential. Moreover, in the context of simulated gastrointestinal digestion, prediction of the in vivo bio-accessibility merits attention. In vivo, brush border peptidases (BBM) primarily contribute to the profile of the digestion products uptaken at intestinal level and their impact on individual peptides should be evaluated. The objective of this work is to evaluate the incorporation of BBM of the intestinal epithelium in the in vitro gastrointestinal digestion of milk proteins.

RESULTS

The incorporation of BBM to the intestinal phase reduces the spectrum of peptides with increased proportion of oligopeptides in the case of casein.

The incorporation of BBM from longer sequences identified in human jejunum digests. In bold: sequences previously identified in human jejunum digests.

RESULTS

Table 3. Sequences generated by BBM from longer sequences identified in the control in vitro gastrointestinal digestion. In bold: sequences previously identified in human jejunum digests.

Table 2. Statistical analysis of control, BBM 15 and BBM 45 amino acids means calculated in nmol.

(*): p < 0.05; (**): p < 0.01; (***): p < 0.001.

Significant increase in most amino acids with the addition of BBM, with higher contribution of Pro, Ala, Val, and Ile in both substrates.

ORGUEST in vitro digestion

Gastric phase

MM phase

Free amino acids

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CONCLUSION

The incorporation of BBM to the in vitro gastrointestinal digestion allows the identification of short peptides that have been demonstrated relevant to the human situation. Since the amount of identified peptides is reduced, it should be considered a complementary tool when the total picture of peptides is required.

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The incorporation of BBM to the in vitro gastrointestinal digestion allows the identification of short peptides that have been demonstrated relevant to the human situation. Since the amount of identified peptides is reduced, it should be considered a complementary tool when the total picture of peptides needs to be determined.