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Rachel Boutrou[1,2], Claire Gaudichon[3], Gheorghe Airinei[4], Robert Benamouzig[4], Didier Dupont[1,2], Julien Jardin[1,2], Daniel Tomé[3], Joëlle Léonil[1,2]

[1]INRA UMR 1253 STLO, Rennes France.
[2]Agrocampus Ouest UMR 1253 STLO, Rennes
[3]INRA AgroParisTech, UMR 914, Paris, France
[4]Gastroenterology Unit, CRNH IdF, AP-HP, Bobigny, France

didier.dupont@rennes.inra.fr

Milk proteins are of interest since they contain soluble (SP) and non-soluble (casein) fractions that behave differently during digestion. SP are rapidly evacuated from the stomach whereas gastric emptying of casein is delayed (Boirie et al. 1997). This difference that has been demonstrated *in vivo* in animals and in humans induces differential appearance of derived peptides and amino acids in the blood and postprandial metabolic response.

This study aims to assess in humans the intestinal digestion kinetics of both protein fractions.

It has been performed on 13 volunteers whose diets were standardized during 9 days. On the 9th day they ingested the meal composed among others of 30 g of either casein or SP. Jejunal effluents were continuously collected every 30 min for 6 hours using a double lumen nasogastric tube that migrated to the jejunum. In order to verify whether casein and SP present differential digestion in jejunum, immunoreactive proteins were quantified and peptides were identified using proteomic tools (chromatography coupled on line with mass spectrometry).

This study shows that i) immunoreactive proteins and peptides were present in a greater amount during the first hour of digestion for SP meal whereas a two-step digestion was observed for casein meal: a first one at 1.5-2.5 hours and a second one 4-5 hours after meal ingestion, ii) large protein fragments were present within the jejunum for both meals

thus demonstrating that proteins digestion was incomplete in the jejunum, and iii) the peptides derived from casein were smaller than the ones from SP.

The digestion of casein and soluble proteins differed in both the intestinal kinetics and the molecular weight of the peptides. These differences offer several applications in overweight and elderly people or in patients with wasting disorders.