In Vitro Infant Digestion of Whey Proteins Isolate–Lactose

ABSTRACT

The model in vitro protein digestion technique has received greater attention due to providing significant advantages compared to in vivo experiments. This research employed an in vitro infant digestive static model to examine the protein digestibility of whey proteins isolate–lactose (WPI–Lac). The polyacrylamide gel electrophoresis (PAGE) pattern for alpha-lactalbumin of WPI at 60 min showed no detectable bands, while the alpha-lactalbumin of the WPI–Lac was completely digested after 5 min of gastric digestion. The beta-lactoglobulin of the WPI–Lac was found to be similar to the beta-lactoglobulin of the WPI, being insignificant at pH 3.0. The alpha-lactalbumin of the WPI decreased after 100 min of duodenal digestion at pH 6.5, and the WPI–Lac was completely digested after 60 min. The peptides were identified as ~2 kilodalton (kDa) in conjugated protein, which indicated that the level of degradation of the protein was high, due to the hydrolysis progress. The conjugated protein increased the responsiveness to digestive proteolysis, potentially leading to the release of immunogenic protein by lactose, and to the creation of hypoallergenic protein.