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Title:

A comparison of WPC hydrolysates by the use of commercial proteases available in Brazil

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Whey is still underutilized in Brazil, and dried ingredients and more specialized whey products are starting to be internally produced, including an interest in whey hydrolysates, especially for those that have functional properties. The aim of this study was to assess enzymatic hydrolyses of whey protein concentrate (WPC 34) by using five different commercial proteases, available in Brazil: Novo ProD, alcalase, pancreas trypsin, neutrase and flavourzyme. The hydrolysis rates were analyzed and the peptidic profiles were compared through RP-HPLC, with a further sequencing of the main peptides through MS/MS. Emulsifying capacity was also evaluated after 24 and 48 h-experiments. The hydrolyses were carried out for 5 h, and the hydrolysis curves showed a main increase of 10.27 times in the concentration of peptides and amino acids using alcalase, and 7.66, 3.99, 2.66, 2.06 when using neutrase, novo ProD, pancreas trypsin and flavourzyme, respectively. All tested enzymes showed very diverse, but conservative peptidic profiles when comparing the treatments along the time. Alcalase and Novo ProD presented richer profiles, and it was also possible to observe high hydrolysis of alpha-La, while beta-Lg remained in most of the treatments. In general, there was not a great change into the emulsifying property of the hydrolysates, but for alcalase the emulsifying capacity showed a gradual decrease after 3-h experiments. The results showed that, among the enzymes studied, Alcalase 2,4 LGF[®] showed a higher potential of use, due to its high hydrolytic capacity on whey proteins, added to the good emulsifying properties of the peptides produced, when compared to the intact protein.

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