SCALING UP THE PROCESS FOR OBTAINING AN ADDED-VALUE WHEY INGREDIENT WITH ANTIHYPERTENSIVE ACTIVITY

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Hypertension affects one billion people worldwide and the search for alternative treatments to chronic diseases is increasing with the passing years. Whey protein is a byproduct of dairy industry which presents peptides able to cross the intestinal barrier and modulate responses on the cardiovascular system, lowering blood pressure. Despite all knowledge on health benefits of whey peptides, there are only few products commercially available based on antihypertensive whey peptides, showing the need to study the obtainment process of bioactive whey hydrolysates in larger scales. In this regard, the present study proposed to compare the processes of antihypertensive whey protein hydrolysates in bench (200 mL) and pilot scales (18 L). Furthermore, a sensorial evaluation of the produced hydrolysate was carried out aiming the development of a functional ingredient to be incorporated into products for humans' consumption. Hydrolyses processes were performed with a 1,25% (w/v) whey protein concentrate 88% solution, pH 2 and 1.91% (w/w) of pepsin during a 3h-reaction at 37°C. Similar peptide profiles were obtained in both bench and pilot scales, showing that scaling up the process did not significantly interfere in the hydrolysis process. β -lactoglobulin was partially hydrolyzed while α -lactoalbumin was completely degraded between 1 and 2h of reaction. Bench and pilot scale samples were then freeze dried and spray dried, respectively, and no significant changes in the peptide profiles were observed. Biological assays corroborate with the chemical analyses, showing that both hydrolysates were able to generate similar a vascular relaxation in rats' denuded aortic rings, achieving 67.82% to laboratorial and 71.84% to pilot scales, when cumulative concentrations of 0.3, 1, 3, 5 and 10 mg were applied. After the chemical and biological assays, the hydrolysate obtained in the pilot scale was added into a commercial dairy dessert and evaluated by 100 consumers in relation to acceptance and purchase intention. The results revealed high averages for the evaluated parameters. These results brought the possibility of developing a whey hydrolysate-based product with high antihypertensive potential and hidden low bitterness. Supported by FAPERJ and CAPES.

Keywords: whey protein; hydrolysis; pepsin.