USE OF DIFFERENT PROTEASES TO OBTAIN WHEY PROTEIN CONCENTRATE HYDROLYSATES WITH INHIBITORY ACTIVITY TOWARD ANGIOTENSIN-CONVERTING ENZYME


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The arterial hypertension affects between 8 to 30% of the population in Latin America. Scientific evidence suggests that bioactive peptides, released during digestion or in vitro enzymatic hydrolysis from protein, could be introduced into the diet as an alternative, non-pharmacological approach to prevent and treat arterial hypertension. The objective this study was to evaluate the effect of enzyme type (including pancreatin and proteases from Bacillus licheniformis, Aspergillus oryzae and Aspergillus sojae), at different enzyme:substrate ratios (E:S = 0.5:100, 1:100, 2:100, 3:100, 4:100 and 8:100), to obtain whey protein concentrate (WPC) hydrolysates with inhibitory activity (IA) toward angiotensin-converting enzyme (ACE). Twenty-four hydrolysates were prepared and their IA were evaluated in vitro, using a RP-HPLC. It is noteworthy that the greatest IA results were obtained with the Bacillus licheniformis protease (96.66%), followed by the Aspergillus oryzae protease (90.22%), both with the E:S ratio of 8:100. The hydrolysates that exhibited the lowest IA were those prepared with the Aspergillus sojae protease. A very low IA (1.3%) was found for undigested WPC, indicating that enzymatic treatment to release small peptides is required for the manifestation of this bioactivity. Changes of enzyme type and E:S ratio had different influences on the ability of WPC hydrolysates to inhibit ACE. The action of Bacillus licheniformis protease was better than the other enzyme because it produced hydrolysates with the greatest rates of inhibitory activities. The best result was obtained using an E:S ratio of 8.0:100. Financial support: FAPEMIG and CNPq.