DETERMINATION OF AMINO ACIDS AND CHEMICAL SCORE OF BOVINE WHEY PROTEINS

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Bovine whey proteins are considered to have a high nutritional value, since they present high concentrations of branched-chain amino acids with an excellent balance and bioavailability of essential amino acids. This study aims to determine the protein content, the total amino acids and the total free amino acids and to evaluate the essential amino acids score (EAS), as well as the protein digestibility corrected amino acid score (PDCAAS) of four protein sources. Three of them were obtained from bovine whey (concentrate, hydrolyzed and isolate) and one from bovine milk – casein, used as the control. The protein content was determined by the Dumas method. To evaluate the total amino acids of the protein sources we performed a hydrolysis with 6 N hydrochloric acid. The amino acids released in the acid hydrolysis were mixed with phenylisothiocyanate and separated by high performance liquid chromatography (HPLC) on a reverse phase. We noticed that casein, the whey protein hydrolyzed (WPH), and the whey protein isolate (WPI) were adequate in relation to essential amino acids content when compared to the pattern established by FAO/WHO (1990), different from the whey protein concentrate (WPC), which is probably justified due to the reduced protein content of the WPC (33.80%) when compared to the higher protein content (≥ 73.92%) of the other samples. According to the EAS and the PDCAAS, casein, WPH and WPI do not show limiting amino acids. We conclude that the protein sources casein, WPH and WPI were of high nutritional content.