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Scale up of enzymatic hydrolysis of bovine plasma protein for producing an antioxidant

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In modern society, there is an increasing awareness of the relationship between diet and health. Reason why the use of synthetic antioxidants in the food industry is regulated, due to the side effects on consumer health, which has created the trend of consumption of products of natural origin. One of the alternatives to satisfy this demand is the search for antioxidants from natural sources, such as the production of hydrolyzed antioxidants from bovine plasma, a fraction of the blood produced in the plants. In the present study, the response surface methodology was used to minimize the time to reach a degree of hydrolysis (GH) of 20%, in the enzymatic hydrolysis of bovine plasma, taking as factors the concentration of substrate, enzyme/substrate and the answers the time required to obtain a degree of hydrolysis of 20% and the antioxidant activity. The hydrolysis was carried out in a 1L reactor controlled by a Titrand 842 automatic titrator (Metrohm, Switzerland), with Alcalasa 2.4L, pH 9.0 and 61.5 °C. The optimum conditions obtained in the 1L reactor were scaled to 5 L, in a BioFlo 310 reactor (New Brunswick, USA). The best conditions at 5L were 79 g/L of substrate, 22% of I/O, to obtain a time of 16.1 ± 0.7 min (GH 20%) and antioxidant capacity of 59.64%.

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