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sciforum-112978: Antioxidant activity of casein hydrolysates produced using *Bromelia serra* leaf extract

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In this study, hydrolysis tests were conducted on casein at different incubation times to assess the antioxidant activity of hydrolysates produced by *Bromelia serra* leaf extracts (BLEs). The hydrolysis reaction was carried out at 90, 120, and 240 minutes (treatments) at 55°C in an incubator with constant agitation at 300 rpm. The reaction was stopped by thermal shock (boiling above 100°C) for 15 minutes. The degree of hydrolysis (%DH) was determined using the Adler-Nissen TNBS method. The antioxidant capacity of a sample was measured based on its ability to neutralize the ABTS cation radical. The progression of the percentage of %DH over digestion time showed no significant differences between 90 and 180 minutes, with 5.68% and 6.91% DH, respectively. At 240 minutes of incubation, the highest DH value was obtained, at 12%. The antioxidant activity of the hydrolysates obtained from each treatment was measured. Dilutions of the hydrolysates from each treatment were also prepared to determine the percentage of inhibition as a function of protein concentration and to calculate the IC50 values. Antioxidant activity, expressed as TEAC (Trolox Equivalent Antioxidant Capacity), showed that casein exhibits antioxidant activity even without hydrolysis. Additionally, it was observed that the antioxidant activity of casein significantly decreased when exposed to hydrolysis at 55°C for 90 and 180 minutes with BLE. After 240 minutes of hydrolysis with BLE, its antioxidant activity significantly increased by approximately 18%. Regarding IC50, a similar trend was observed. The lowest IC50 value was obtained for the 240-minute hydrolysate, followed by unhydrolyzed casein. This indicates that 1.68 mg/mL of hydrolyzed casein (55°C for 240 minutes) is required to achieve 50% inhibition of the ABTS cation radical, compared to 1.98 mg/mL for unhydrolyzed casein.



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