

ANTIOXIDANT ACTIVITY OF WHEY PROTEINS

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Abstract

The process of cheese making produces huge amount of whey with commendable nutritional potential. Many types of whey proteins coming from milk serum and from caseins (e.g. α -lactalbumin, lactoferrin, β -lactalbumin and glycomacropeptide) should be applied to produce bioactive peptide chains.

Whey protein isolate powder (WPI) was dissolved in distilled water with a concentration of 10 w/w% as investigational solution. Laboratory scale ultrasound processor with a maximum power of 100W was used to pre-treat the samples. Best conditions of treatments in the examined range (60-100% of amplitude, 5-30 minutes of treatment time) were determined by Central Composite Face-centered model with a software named Statistica ver. 13.

Bromelain enzyme from pineapple was used for the breakdown of whey proteins. Differences of antioxidant activity were measured by 2,2-diphenyl-1-picrylhydrazyl (DPPH) method.

Results revealed that sonication without enzymatic proteolysis can increase biological activity of peptide chains in cheese whey, but the effect of enzymatic treatment was higher: sonicated samples had $3.0 \pm 0.5\%$ growth of antioxidant activity compared to the control samples, while enzymatic treatment produced $18.3 \pm 0.4\%$ increment.

Positive effect of combined treatment was not proven: when enzymatic digestion followed the sonication of WPI solutions, growth of biological activity was only $9.7 \pm 0.5\%$.

Key words: Whey, DPPH, ultrasound, bromelain

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