

Process optimization for enzymatic hydrolysis of whey protein concentrate

Mahadevaiah, H. M. Jayaprakasha and K.B. Suresha

A study was under taken to optimize the enzymatic hydrolysis of whey protein concentrate for utilizing the resultant hydrolyzate in ragi based functional weaning food. Spray dried Whey protein concentrate (WPC) was reconstituted and heated to 80°C for 5 min. The reconstituted medium was inoculated separately with Neutrase, papain and trypsin enzymes at various enzyme to substrate ratio (E: S) and incubated for a period of 180 h at their respective optimum pH and temperature. The effect of enzyme on degree of hydrolysis was monitored at a regular interval of 30 minutes by measuring change in pH. From among the three enzymes tried for enzymatic hydrolysis, it was observed that Neutrase enzyme is superior with respect to the extent of hydrolysis obtained followed by trypsin and papain. Neutrase enzyme could able to give hydrolysis of 6.08 per cent degree of hydrolysis within 150 minutes of duration. From the study, it was found that reconstituting the spray dried WPC at 15 per cent protein level and adding Neutrase enzyme at concentration of 1:50 and incubation for a period of 150 min is optimum for obtaining the maximum degree of hydrolysis. Spray dried WPC reconstituted to 15 per cent protein level and hydrolysed using Neutrase enzyme at 1:50 ratio for a period of 150 min was further used in the formulation of weaning food.

Key Words : Process optimization, Enzymatic hydrolysis, Protein concentrate

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