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Optimization of enzymatic hydrolysis condition of mud crab (*Scylla serrata*) meat to obtain maximum angiotensin-converting enzyme inhibitory (ACEI) activity

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This study reported the optimization of enzymatic protein hydrolysis condition of mud crab meat to obtain maximum angiotensin-converting inhibitory (ACEI) activity. Firstly, screening of commercial food grade enzymes (Alcalase[®], Protamex[™], Neutrase[®] and papain) were carried out with hydrolysis time of 1 to 4 hours to select the enzyme with the highest ACEI activity. Then, enzymatic hydrolysis was further optimized by using Response Surface Methodology with a face centered Central Composite Design (CCD). Four variables including temperature (45-65°C), pH (pH 5.5-7.5), hydrolysis time (1-4 hours) and enzyme to substrate (E/S) ratio (1-3%) were employed. It was found that mud crab hydrolysate produced from Protamex[™] gave the highest ACEI activity compared to Alcalase[®], Neutrase[®] and papain. Optimization study shows that 2FI model can be used to describe the effect of the four variables on the ACEI activity of mud crab. The optimum condition was at 65°C, pH 5.5, 1% E/S and 4 hours of hydrolysis time. Validation of optimum condition shows that the experimental value of ACEI activity (88.93%) was close to that of predicted value (90.08%). The IC₅₀ of ACEI activity of mudcrab hydrolysate prepared at this optimum condition was 2.64±0.112 mg/ml. In conclusion, mud crab hydrolysate is an alternative source of ACEI peptides. Further study is on going to purify and characterize this bioactive peptide.

Biography

Amiza Mat Amin has completed her Bachelor of Technology (Food Technology) from Universiti Sains Malaysia in 1993 and obtained her PhD from Leeds University, UK in 1998. Currently, she is an Associate Professor and Dean of School of Food Science and Technology, Universiti Malaysia Terengganu, Malaysia. Her main research interest is on food protein.

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