

UNIVERSITI TEKNOLOGI MARA

**BITTERNESS AND TASTE
MASKING OF ANGELWING CLAM
HYDROLYSATE (*Pholas orientalis*)
WITH β -CYCLODEXTRIN**

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ABSTRACT

This research was conducted to characterize the bitterness of angelwing clam hydrolysate produced using bromelain and flavourzyme. Degree of hydrolysis (DH) and yield in bromelain hydrolysate (BH) were found to be higher than flavourzyme hydrolysate (FH) which is 22.7% DH, 23.32% yield and 12.94% DH and 16.25% yield, respectively. Sensory analysis showed that BH was more bitter than FH. In order to reduce the bitterness, the more bitter hydrolysate was selected for further taste masking using kneading and physical mixing methods. Sensory data revealed that there was significant difference ($p > 0.05$) in bitterness between BH, hydrolysate produced by kneading method (KMH) and hydrolysate produced by physical mixing (PMH). KMH and PMH were least bitter compared to BH. The least bitter taste in KMH and PMH indicated that the complexation had occurred between the bitter compounds in BH with the β -cyclodextrin. This is supported by the presence of hydrophobic amino acids that contributed to the bitter taste which were found to be lower in KMH and PMH and only benzothiazole compound was found in KMH. Besides, other results also supported that the complexation had occurred in which lesser amount of protein fragments was observed in KMH and PMH indicated denaturation effect of protein was reduced by SDS reagent. C=O and C-O stretching also shifted to a higher and lower wavenumber, respectively. A new crystal lattice was formed in KMH and PMH suggesting the formation of complexes between BH and β -cyclodextrin. The application of the protein hydrolysate in food system was studied through functional properties and antioxidant activity. BH showed high protein content at 74.41% compared to KMH and PMH at 48.67% and 62.80%, respectively. Modified protein hydrolysate had lower fat content; KMH (2.48%) and PMH (2.56%) and lower moisture content; KMH (4.74%) and PMH (7.72%) compared to BH (3.62%, 17.89%) respectively. BH and PMH had better solubility, emulsifying properties, water and oil holding compared to KMH. Antioxidant activity was studied within six weeks at 4°C and 25°C storage temperature. KMH showed no significant changes at both storage temperature and time revealed that kneading method is a better method for taste masking than the physical mixing method and the product has potential to be applied in food system as a new marketable seafood product.

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