

Autolysis of Clown Featherback (*Chitala ornata*) Muscle

Chompunutch Thiabmak¹, Chodsana Sriket², Suthasinee Yarnpakdee³,
Siriporn Riebroy Kim⁴, and Sitthipong Nalinanon^{1*}

¹Faculty of Agro-Industry, King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand

²Program in Food Science and Technology, Faculty of Agriculture, Ubon Ratchathani Rajabhat University, Ubon Ratchathani 34000, Thailand

³Division of Marine Product Technology, Faculty of Agro-Industry, Chiang Mai University, Chiang Mai 50100, Thailand

⁴Food and Nutrition Program, Faculty of Agriculture, Kasetsart University, Bangkok 10900, Thailand

*Corresponding author. E-mail: sitthipong.na@kmitl.ac.th

<https://doi.org/10.12982/CMUJNS.2019.0007>

Received: July 16, 2018

Revised: September 8, 2018

Accepted: September 18, 2018

ABSTRACT

Clown featherback (Chitala ornata) is a freshwater fish important in the cuisine of Thailand and other Southeast Asian countries. It has a short marketable life due mainly to poor gelling characteristic even when stored in ice. This deterioration has been associated with muscle autolysis. The research was aimed to investigate the autolysis of clown featherback muscle (CFM). To test autolysis, mince from CFM was incubated in a temperature controlled water bath for 60 min at 5, 10, 20, 30, 40, 50, 60, 65, 70, 75 or 80 °C at pH levels over the range of 2-11. The results showed that the highest autolytic activity was at 70 °C and it occurred at pH levels of 4 and 7, with pH 4 showing the highest autolysis. CFM was incubated with its crude enzyme counterpart at the physiological pH (6.73) at both 4 °C and 25 °C. Degradation of natural actomyosin showed that after incubation at either temperature myosin heavy chain was susceptible to hydrolysis indicating that autolysis of CFM took place even at low temperature as affected by its endogenous proteases. The effects of several protease inhibitors were tested and autolysis at the physiological pH (6.73) was strongly inhibited by 10 μM pepstatin A (20.3% inhibition), which had significantly higher inhibitory activity (P<0.05) among the protease inhibitors tested. This suggests that aspartic protease was the major proteinase in CFM.

Keywords: Clown featherback, Autolysis, Actomyosin, Degradation, Fish muscle