Effect of Endogenous Transglutaminase on Threadfin Bream Surimi Gelation

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ABSTRACT: Transglutaminase(TGase) activity of threadfin bream mince was 99.6 units/g of dry weight. After washing and screw-pressed dewatering, 44% residual activity was retained. Covalent cross-linking of myosin heavy chain (MHC) was observed at both 25 and 40 °C and supported by increased gel strength. When pre-incubation at 40 °C was prolonged to 4 h, breaking force and MHC decreased due to endogenous proteinase(s). TGase activity towards MHC and synthetic substrates was effectively inhibited by iodoacetic acid (IAA). Autolytic activity and degradation of MHC was inhibited by phenylmethanesulfonyl fluoride (PMSF). Addition of 0.2% Ca^{2+} significantly improved breaking force and increased MHC cross-linking of surimi gels pre-incubated at 40 °C for 2 h.

Keywords: transglutaminase, myosin heavy chain, cross-linking, threadfin bream