

Title Muscle changes in hard and soft shell crabs during frozen storage
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Citation LWT - Food Science and Technology, Volume 42, Issue 3, April 2009, Pages 723-729
Keywords Frozen storage; Crab; Soft and hard shell; Muscle; Lipid oxidation; Formaldehyde; Natural actomyosin; Surface hydrophobicity

Abstract

Chemical and physicochemical changes of muscles from hard and soft shell mud crabs (*Scylla serrata*) were monitored during 12 weeks of storage at $-20\text{ }^{\circ}\text{C}$. Ca^{2+} -ATPase activity of natural actomyosin (NAM) from both crabs decreased continuously during storage, regardless of muscle types. After 8 weeks of storage, Ca^{2+} -ATPase activity of NAM from lump muscle of soft shell crab decreased to a greater extent than that of hard shell crab ($P < 0.05$). An increase in disulfide bonds was observed with the coincidental decrease in sulfhydryl group content during extended storage ($P < 0.05$). Surface hydrophobicity of all samples increased up to 8 weeks, being this sampling time followed by a gradual decrease. Formaldehyde content of all samples increased throughout the storage ($P < 0.05$). Slightly higher formaldehyde content was found in soft shell crab muscle, compared with hard shell counterpart ($P < 0.05$). Claw muscle generally contained a greater amount of formaldehyde than lump counterpart ($P < 0.05$). Protein solubility of all samples decreased continuously throughout the 12 weeks of frozen storage ($P < 0.05$). Lipid oxidation took place during the extended storage as evidenced by the increase in thiobarbituric acid reactive substances. The pH of all samples generally decreased during frozen storage. Cooking loss of all crab muscles increased as storage time increased ($P < 0.05$) and was more pronounced in claw muscle, particularly from soft shell crab.