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4 **Ca<sup>2+</sup> Affects Physicochemical and Conformational Changes of**  
5 **Threadfin Bream Myosin and Actin in a Setting Model**

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10 **Running head: Effect of Ca<sup>2+</sup> on conformation of myosin**

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## Abstracts

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The effect of  $\text{Ca}^{2+}$  on physicochemical and conformational changes of threadfin bream (TB) myosin and actin during setting at 25 and 40 °C was investigated.  $\text{Ca}^{2+}$  ion at 10-100 mM induced the unfolding of myosin and actin as evident by an increase of surface hydrophobicity ( $S_0$ , ANS) at 40 °C. Total SH groups also decreased with an increased  $\text{Ca}^{2+}$  concentration, suggesting that  $\text{Ca}^{2+}$  promoted the formation of disulfide bonds during setting at 40 °C. Both hydrophobic interactions and disulfide linkages were involved in formation of myosin aggregates at 40 °C, and were enhanced by addition of 10-100 mM  $\text{Ca}^{2+}$ . Myosin Ca-ATPase activity decreased at  $\text{Ca}^{2+} > 50$  mM, indicating conformational changes of myosin head. Circular dichroism spectra demonstrated that  $\text{Ca}^{2+}$  reduced the  $\alpha$ -helical content of myosin and actin incubated at either 25 or 40 °C.  $\text{Ca}^{2+}$  induced conformational changes of TB myosin and actin incubated at 40 °C to a greater extent than at 25 °C.

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**Key words:** Threadfin bream, myosin, actin, calcium, setting