



Experiment on Induction Recovery Potentiality of Different Plant-Source Anesthetic Agents in Shrimp (*Metapenaeus dobsoni*)

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The Author

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This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made

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Abstract

Anesthesia is the state in which an external agent depresses the nervous system thereby rendering a lack of sensation which is very important for routine aquaculture operations. Therefore, this study aims to analyze the induction and recovery potentials of three plant-source anesthetics called eugenol, dygenol, and clove oil in *Metapenaeus dobsoni*, a commercially important marine shrimp species from the Bay of Bengal. In this study, four induction stages (FLE- First loss of equilibrium, CLE-complete loss of equilibrium, LM-loss of movement, LSLM- Loss of swimming leg movement) and two recovery stages (FR- First response and CR- Complete recovery) were taken into consideration under three different doses (250ppm, 350ppm, and 450ppm). Results revealed that all three anesthetics successfully anesthetized the *M. dobsoni* in a dose-dependent manner and all shrimps recovered successfully with no mortality. Based on the findings, the best suitable anesthetics were determined as eugenol and dygenol, at a dose of 250 and 350 ppm for *M. dobsoni* in which induction and recovery occur within the recommended time (induction within 3 min and recovered within 5 min respectively). Comparatively, clove oil took higher recovery time than the other anesthesia agents. The present research will help hatchery operators, shrimp farmers and others in the aquaculture industry to find the appropriate dosage of anesthesia to improve spawning, induced breeding, hormone injection, transportation, and to reduce overall mortality in *M. dobsoni*.

Keywords-: Anesthesia, Induction, Recovery, *Metapenaeus dobsoni*, Eugenol, Dygenol, Clove Oil.