Comparative Performance Assessment of Two Commonly Used Anesthetics in *Mystus gulio*

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Fish Biology and Biotechnology

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Authorization

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

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The Author

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	values for each parameter. Correlation coefficients (r) are shown by numerical values; higher correlations are indicated by greater front sizes. Asterisks indicate the significance level (*, $p< 0.05$ and **, $p< 0.01$).	

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. The prime objective of this study is to assess the anesthetic effects of clove oil and dygenol on the *Mystus gulio*, through measuring the time of anesthesia recovery. To determine the effect of clove oil and dygenol, three groups of fish were tested with different body sizes, where small fish with a mean body length (3.85 ± 0.3 cm), medium (10.7 ± 2.2 cm), and large (14.1 ± 0.7 cm), n= (10-15). The anesthetics were used at concentrations of 100, 150, and 200 ppm. The results elucidate the significant relationships between the concentration of the anesthetic and the body size of the fish. Each of these variables showed statistical significance ($p < 0.05$). With an increment of the concentrations of anesthesia, induction time decreased linearly for each group of fish for both clove oil and dygenol ($P<0.05$). In addition, the independent sample t-test expressed a significant difference between clove oil and dygenol at each concentration and size of fish. From our experiment, it was found that dygenol needs less time compared to the clove oil at each dose for different groups of fish. Anesthesia time and the recovery time were shorter for the small fish than the larger ones ($P<0.05$). There was no record of fish mortality in this study, indicating that all fish used in this study recovered successfully after being anesthetized. I can conclude my study that the smaller-sized *Mystus gulio* was more easily anesthetized and recovered more rapidly from anesthesia than the larger-sized fish. So, this study might be helpful for the further study of laboratory handling, care, and research for this commercially important fish species.

Keywords: Anesthesia, Induction, Recovery, Dygenol, Clove Oil, *Mystus gulio*