



# **BEHAVIORAL AND HEMATOLOGICAL INDICES OF MUDSKIPPER (*Apocryptes bato*) EXPOSED TO DIFFERENT SALINITY CONDITION**

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

**Department of Fish Biology and Biotechnology  
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**June 2023**

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**The author**

**June, 2023**

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

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## **The Author**

<b>Table of Contents</b>	
<b>Contents</b>	<b>Page No</b>
Title page	i
Authorization	ii
Acknowledgements	iii
List of contents	iv–vi
List of Figures	vii
List of Tables	viii
Abstract	ix
<b>Chapter-1: Introduction</b>	1–4
1.1 Background	1-3
1.2 Aims and objectives of the study	4
<b>Chapter-2: Review of Literature</b>	4-13
2.1 Mudskipper	5
2.2 Morphology of mudskipper	6-7
2.2.1 Eyes	
2.2.2 Skin	
2.3 Chromosomes	7
2.4 Nervous and sensory systems	7-8
2.4.1 Brain	
2.4.2 Alimentary tract or gastrointestinal tract	
2.5 Kidney	8
2.6 Habit and habitat	8
2.7 Reproduction	9
2.8 Behavior	9-10
2.8.1 Rhythmic behavior	
2.8.2 Burrowing and territoriality	
2.8.3 Social behavior	
2.9 Adaptations	10-12
2.9.1 Behavioral changes	
2.9.2 Morphological changes	
2.9.3 Physiological changes	
2.10 Environmental influences on behavior	11-12
2.11 Behavioural responses in Mudskipper ( <i>Periophthalmus papilio</i> ) exposed to sodium bromide under laboratory conditions	12
2.12 Salinity tolerance of mudskipper	12-13

<b>Chapter-3: Materials and Method</b>	14-18
3.1 Experimental fish and sample collection	14
3.2 Acclimation of experimental fish	14
3.3 Experimental design for studying the induction and recovery pattern of mud skipper after anesthesia at different salinities	14-15
3.4 Behavioral observation of mudskipper at different salinities in the aquarium conditions	15-16
3.5 Growth performance study	16
3.6 Measurement of hematological parameters	17
3.7 Analysis of cellular and nuclear abnormalities of erythrocytes	18
3.8 Statistical analysis	18
<b>Chapter-4: Results</b>	19-23
4.1 Anesthesia induction time of <i>Apocryptes bato</i> at different salinities	19
4.2 Anesthesia recovery time of <i>Apocryptes bato</i> at different salinities	20
4.3 Behavioral response of <i>Apocryptes bato</i> at different salinities	20-21
4.4 Growth performance of mud skippers reared at different salinity	21
4.5 Blood physiology of mud skipper reared at different salinity	22
4.6 Cellular and nuclear abnormalities of erythrocytes of mudskipper reared at different salinities	22-23
<b>Chapter-5: Discussion</b>	24-27
5.1 Anesthesia induction and recovery time of <i>Apocryptes bato</i> at different salinity	24-25
5.2 Behavioral response of <i>Apocryptes bato</i> at different salinities	25
5.3 Growth performance of mud skippers reared at different salinity	26
5.4 Blood physiology of mud skipper reared at different salinity	26
5.5 Cellular and nuclear abnormalities of erythrocytes of mudskipper reared at different salinities	27
<b>Chapter-6: Conclusions</b>	28
<b>Chapter-7: Recommendations and Future Perspectives</b>	29
<b>References</b>	30-40
<b>Biography</b>	41

## List of Figures

Figure no.	Title	Page no.
1.	Mudskipper ( <i>Apocryptes bato</i> )	5
2.	External morphology of mudskipper	7
3.	Sampling sites of mudskipper	14
4.	Experimental design for anesthesia in different salinity level A) Taking water by using measuring cylinder, B) Taking anesthesia solution (dygenol) using micropipette, C and D) Mixing the anesthesia with the water properly by using a spoon, E) taking out the fish from the anesthesia solution, F) Measuring length, G) Measuring weight, H) keeping the fish in the recovery tank	15
5.	Experimental design for behavioral observation of mudskipper	16
6.	Measurement of hematological parameters a) RBC, b) WBC, C) Cholesterol d) Glucose	17
7.	Anesthesia induction time of dygenol in <i>Apocryptes bato</i> at different salinities (5, 10, 12, 15, and 18 ppt). Values are presented as mean $\pm$ standard deviation (SD) of the mean (n = 10 for each treatment groups). Different letters of alphabets indicate the statistically significant differences among groups (Tukey's HSD post-hoc test, $p < 0.05$ ).	19
8.	Anesthesia recovery time of dygenol in <i>Apocryptes bato</i> at different salinities (5, 10, 12, 15, and 18 ppt). Values are presented as mean $\pm$ standard deviation (SD) of the mean (n = 10 for each treatment groups). Different letters of alphabets indicate the statistically significant differences among groups (Tukey's HSD post-hoc test, $p < 0.05$ ).	20
9.	Several cellular and nuclear abnormalities in the erythrocytes of mudskipper under different salinity condition; a) normal erythrocytes, b) twin cell, c) nuclear budding, d) micronucleus, e) binucleus, f) triplet cell, g) tear- dropped cell, h) multiple nucleus, i) dead cells	23

## List of Tables

<b>Table no.</b>	<b>Title</b>	<b>Page no.</b>
<b>1.</b>	Growth performance of mud skippers reared at different salinity.	21
<b>2.</b>	Hemato-biochemical parameters of mud skipper reared at different salinities	22



## **Abstract:**

Salinity is one of the ecological factors directly linked to the aquatic ecosystem and regulates the growth, physiology, and development of fish. In order to investigate the effect of salinity on the common intertidal mangrove mudskipper, *Apocryptes bato* were subjected to different salinities (5, 10, 12, and 15 ppt) for a period of 21 days. At first, *A. bato* was exposed to 200ppm of anesthetic (dygenol) solution at different salinities, and anesthesia induction and recovery time were recorded. Increased salinity was found to the induction and recovery time in this species. The behavioral observations in the aquarium did not show any alterations in the land-use pattern, number of holes and channels in the mud, jumping, and feed intake. Hematological analysis after 21 days of rearing found elevated glucose levels in fishes reared at 5 and 15 ppt salinities. The growth of *A. bato* was also significantly impacted by the salinities with higher growth performance at 10 and 12 ppt compared to the 5 and 15 ppt. In addition, higher frequencies of cellular and nuclear abnormalities like twin cell, nuclear budding, micronucleus, binucleus, triplet cell, tear-dropped cell, multiple nucleus, and dead cells were recorded in fishes reared at 5 and 15 ppt in comparison to the 10 and 12 ppt. The findings of the present study suggest that increased salinity significantly affected the behavior, growth, and hematology of mudskippers in the aquarium conditions.

**Keywords:** mudskipper, salinity, anesthesia, behavior, cellular and nuclear abnormalities, growth