

**INDUSTRIAL PROSPECT OF FRESH WATER MOLLUSC,**  
*Bellamyia bengalensis*

*Thesis submitted for*  
*The degree of Doctor of Philosophy in Science*  
*of Vidyasagar University*  
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**Submitted by**  
**DEBAJIT CHAKRABORTY, M.Sc.**

**Submitted to**  
**The Department of**  
**Aquaculture Management & Technology**  
**Vidyasagar University, Midnapore-721102, West Midnapore,**  
**West Bengal, India.**

*Dedicated To My*  
**BABA**  
&  
**MA**

*Who have been a  
constant source of  
Inspiration in my life.*



# **Declaration**

I do here by declare that the present Ph. D. thesis entitled “INDUSTRIAL PROSPECT OF FRESH WATER MOLLUSC, *Bellamya bengalensis*” embodies original research work carried out by myself at the Department of Aquaculture Management & Technology, Vidyasagar University, Midnapore, West Bengal, India and Office of the Deputy Director of Fisheries (Microbiology and Parasitology), Department of Fisheries, Government of West Bengal, Pailan, West Bengal, India, under the joint supervision of Dr. Madhumita Mukherjee, Executive Director (Technical) of National Fisheries Development Board (NFDB), Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Government of India, Hyderabad, Telengala, India and Dr. Joydev Maity, Assistant Professor, Department of Aquaculture Management & Technology, Vidyasagar University, Midnapore, West Bengal, India and no part of my Ph. D. thesis work has been submitted for any degree or diploma in any University.

Date:

Place:

(Debajit Chakraborty)

# **Preface**

Mollusca is a large phylum second after arthropods. It colonises in every possible habitat and dominates the benthic communities among the all aquatic ecosystem. *Bellamyia bengalensis* is such kind of mollusca (class-gastropoda) which has a prospective economical significance in West Bengal. Because, this snail interacts more intimately with the local indigenous people of West Bengal. Thus, it has an admirable demand (edible and non edible value) to the different section of people such as rural, semi urban and urban areas of West Bengal.

In West Bengal *B. bengalensis* contribute steady market potentiality, through which people of different rural areas of West Bengal (especially south-western Districts) able to get their daily livelihood as well as maintain their family. It was observed, this fresh water snail act as a very cheap source (in terms of money) of protein and amino acid, fatty acid, vitamin etc, particular to those class of people who cannot able to buy milk, fishes, meats every day, regarding economical setback condition. Not only that doctors often recommend this snail for consumption to those people who are suffering from vision problem, bone related problems, stomach upsets etc. So, in this regards it can be proposed as *B. bengalensis* conceive this kind of noble nutritional values, therefore it can be commercially exploit by involving directly or indirectly rural people to make several value added edible and non edible items, pharmaceutical items etc. This can lead to provide tangible benefit towards the sio-economic development.

Side by side it can also be indicated that, now at the present scenario of globalization, demand: resource ratio is mounting day by day, availability of common animal nutritional resources (i.e. fish, chicken, mutton etc.) are showing decreasing trend, side by side product (mainly edible common consumable animal sources) price is increasing day by day, in this circumstances people often cannot capable to procure their desirable food items. In these situations, *B.bengalensis* can be a solution against these present food security problems.

Industrial prospect of any biological organism consist, which have a good biological/organic values. From these ideas, the present research study was involved about the scientific utilization of *B. bengalensis* with a concept of industrialization, regarding economic development which may lead to create advancement and improvement of our society.

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*Date: .....*

*(DEBAJIT CHAKRABORTY)*

*Place: Vidyasagar University Campus,  
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***ABBREVIATIONS***

| <b>ABBREVIATIONS</b> | <b>FULLFORM</b>             |
|----------------------|-----------------------------|
| Approx.              | Approximately               |
| Avg.                 | Average                     |
| BSI                  | Botanical Survey of India   |
| bp                   | Before packaging            |
| °C                   | Degree centigrade           |
| cm                   | Centimeter                  |
| Dist.                | District                    |
| D                    | Division                    |
| DHA                  | Docosahexaenoic acid        |
| dy                   | Day                         |
| E                    | East                        |
| EAA                  | Essential Amino Acid        |
| EFA                  | Essential Fatty Acid        |
| EPA                  | Eicosapentaenoic acid       |
| FA                   | Fatty acid                  |
| Fig.                 | Figure                      |
| g                    | Gram                        |
| Gr.                  | Group                       |
| i.e.                 | That is                     |
| IMC                  | Indian Major Carps          |
| kg                   | Kilogram                    |
| ml                   | Millimeter                  |
| MS                   | Microsoft                   |
| MUFA                 | Monounsaturated Fatty Acid  |
| N                    | North                       |
| N <sub>2</sub>       | Nitrogen                    |
| NEAA                 | Non- Essential Amino Acid   |
| PUFA                 | Poly unsaturated fatty acid |
| %                    | Percentage                  |
| &                    | And                         |
| µm                   | Micro meter                 |
| min.                 | Minute                      |
| N                    | North                       |
| P                    | Packaged                    |
| S                    | South / Southern            |
| W                    | West/Western                |
| Yr                   | Year                        |
| SD                   | Standard deviation          |
| SS                   | Sum of square               |
| df                   | Degrees of freedom          |
| MS                   | Mean square                 |
| F crit               | F critical value            |
| Sp.                  | Species                     |
| SE                   | Standard Error              |

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---

*Dr. Joydev Maity*

M.Sc., Ph. D. (Fisheries Science)



Fisheries Research Laboratory  
Department of Aquaculture Management  
& Technology,  
Vidyasagar University,  
Midnapore – 721 102, West Bengal, India

Ref No.

Date :

This is to certify that the research work embodied in this thesis entitled “INDUSTRIAL PROSPECT OF FRESH WATER MOLLUSC, *Bellamya bengalensis*” has been carried out by Sri Debajit Chakraborty under my supervision and guidance and the results thereof have not been published by any other workers. He has followed the rules and regulations as laid down by the Vidyasagar University for the fulfillment of requirement for the degree of Doctor of Philosophy (Science).

(DR. JOYDEV MAITY)

*Assistant Professor*

*Fisheries Research Laboratory*

*Department of Aquaculture Management & Technology,*

*Vidyasagar University,*

*Midnapore – 721 102, West Bengal, India .*