Biochemical Status of Small Indigenous Food Fishes

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Kripa Drishti Publications, Pune.

BIOCHEMICAL STATUS OF SMALL INDIGENOUS FOOD FISHES

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Book Title: **Biochemical Status of Small Indigenous Food Fishes**

Author By: **Dr. Sharmistha Chakraborty**

Price: ₹500

1st Edition

ISBN: **978-81-19149-74-2**

9 788119 149742

Published: **Oct 2023**

Publisher:

Kripa-Drishti Publications

A/ 503, Poorva Height, SNO 148/1A/1/1A,
Sus Road, Pashan- 411021, Pune, Maharashtra, India.
Mob: +91-8007068686
Email: editor@kdpublications.in
Web: https://www.kdpublications.in

PREFACE

The study about the fish nutrients is an ongoing area of research in India and abroad. The nutritional value of a fish includes the biochemical analysis with respect to the proximate composition, amino acid profile, fatty acid profile, mineral and vitamin contents. Fishes are vitally proteinous food for human consumption. Many other health nutrients like fatty acids, vitamins, minerals etc. are provided by fishes. The biochemical composition of fishes are varied by the changes of environment, season, age, sex etc. Especially the small fishes are more appreciated by the rural poor people due to their ease of availability and comparatively lower price. Large popular fishes are too costly to be included in the regular diet of poor people. Owing to their high market value these have already gained importance in the field of commercialization as well as scientific investigation.

Previous literatures witnessed a lot of nutritional excellence of the big fishes. But, so far the small fishes were less studied inspite of good nutritional contents possessed by them. The Bodoland Territorial Region of Assam is blessed with myriads of riverline and beels which are highly productive ecosystems. Plenty of fishes inhibit in the rivers, ponds, beels and many other wetlands of this area. However, biochemical analysis of the nutritional value of these fishes were lesser known.

The objective of writing this book is to ensure about the nutritional values of some small indigenous fishes of the study area and create an awareness about human health and nutrition in connection with consumption of such food fishes in our daily diet. The author regrets for printing mistakes (if any) and request the readers to bring them into the notice.

Date: 20/10/2023 ***Dr. Sharmistha Chakraborty***

Dedication

To the Friend Late Sapan Debnath who believed in me when I didn't.

Acknowledgement

There are many people throughout the journey of my life without whom I would not be who I am now. I sincerely acknowledge and thank those special peoples of my life whose supports, suggestion and motivation inspired me to write this book.

Firstly, I convey the deepest gratitude to my mother, Dr. Bhaswati Chakraborty, Associate Professor (Retd.) of Bongaigaon College for her endless support and steady inspiration in every stage of my life and my father Late Sanjib Chakraborty, Advocate, Gauhati High Court for his unconditional support. Without them this book never would have come to be.

I would like to express my gratitude to my respected Ph.D. supervisor Late Dr. B. K. Brahma, Department of Biotechnology, Bodoland University, for his guidance and valuable suggestions in my area of research.

I acknowledge my alma mater, Bodoland University, Kokrajhar and my working Institute, Science College, Kokrajhar for allowing me to carry out my research works. I would like to thank Edward Food Research & Analysis Centre (EFRAC) Ltd. for biochemical analysis of the fish samples.

Last but not the least, I am very much thankful to the team members of 'Kripa Drishti Publications' who were very supportive, quick in response and helped me in publishing this Book.

Date: 20/10/2023 ***Dr. Sharmistha Chakraborty***

Abbreviations

American Public Health Association (APHA)

Atomic Absorption Spectroscopy (AAS)

Below Detectable Limit (BDL)

Biochemical Oxygen Demand (BOD)

Bodoland Territorial Council (BTC)

Chemical Oxygen Demand (COD)

Data deficient (DD)

Dissolve Oxygen (DO)

Docosahexaenoic acid (DHA)

Eicosapentaenoic Acid (EPA)

Endangered (EN)

Essential Amino Acids (EAA)

Fatty Acid Methyl Ester (FAME)

Gas Chromatography- Mass Spectrometry (GC/MS)

High Performance Liquid Chromatography (HPLC)

Least Concerned (LC)

Near Threatened (NT)

Nephelometric Turbidity Unit (NTU)

Not Evaluated (NE)

Polyunsaturated Fatty Acids (PUFAs)

Practical Salinity Unit (PSU)

Reverse Phase (RP)

Total Dissolved Solid (TDS)

UV-Visible Spectrophotometer (UV-VIS)

Vulnerable (Vu)

World Conservation Monitoring Centre (WCMC)

World Health Organization (WHO)

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ABOUT THE BOOK

In recent years due to the toxic effects of 'formalin', a chemical that is used to preserve fishes, people are raising their concern to consume the imported fishes and in this regard the demand of small and indigenous fishes (SIFs) are growing higher. Due to their ease in availability and lower market price, these fishes may be regularly included in our diet. The local people cannot afford the costly big imported fishes. Therefore, the SIFs can become one of major replacements of the imported fishes in human diet. In Assam, particularly in Bodoland Territorial Region plenty of SIFs inhibit in the rivers, ponds, beels and many other wetlands of this area. These fishes are vitally proteinous food for human beings. The market value of these small fishes are lower than that of some big fishes available in this area. Most of the health nutrients like fatty acids, vitamins, minerals etc. are provided by fishes. Especially the small fishes are more appreciated by the rural poor people due to their ease of availability and comparatively lower price. Literatures witnessed a lot of nutritional excellence of the big fishes. But so far, the small fishes were less studied in spite of good nutritional contents possessed by them. The Book "Biochemical Status of Fish Nutrients' covers the biochemical analysis and estimation of nutrient contents of ten small fishes mostly consumed by the Bodo Communities of Kokrajhar District, Assam, which are commercially not so much exploited. The proximate composition, amino acid profile, fatty acid profile, mineral and vitamin contents of the highly consumed SIFs are studied and critically analyzed. The nutrient status of the selected small fishes revealed that all the SIFs are very much nutrient-rich and can be recommended as a vital health supplements. The SIFs were nutritionally competitive with the common big fishes as well. The author believes that this book will create an awareness among the mass about the nutritional importance of the SIFs. The proper utilization of the small fishes will enhance their commercial values and proper care and Government policies are needed to conserve these small indigenous food fishes.

ABOUT THE AUTHOR

Dr. Sharmistha Chakraborty is working as Vice-Principal of Science College, Kokrajhar and Head of the Chemistry Department. She has completed her Ph.D. degree from Bodoland University, Kokrajhar on the Topic "Studies of Nutritional Contents of Commercially Less Exploited Small Fishes Consumed by Bodo Community of Kokrajhar District, Assam". Her area of research includes Chemical, Biochemical and Nutritional studies and analysis with respect to the proximate composition, fatty acids, amino acids, lipids, vitamins & minerals. etc. of different types of small food fishes available in BTR region, assam. Her special paper is Physical Chemistry and focus area of teaching includes States of matter, Chemical and Statistical Thermodynamics, Chemical Kinetics, Electrochemistry and Quantum Chemistry etc.

KRIPA DRISHTI PUBLICATIONS

Price: ₹500

Kripa-Drishti Publications
A-503 Poorva Heights, Pashan-Sus Road, Near Sai Chowk,
Pune – 411021, Maharashtra, India.
Mob: +91 8007068686
Email: editor@kdpublications.in
Web: https://www.kdpublications.in

ISBN: XXX-XX-XXXXX-XX-X