SEASONAL VARIATION OF BIOCHEMICAL AND MICROBIAL ANALYSIS OF FIVE COMMERCIALLY IMPORTANT DRIED FISH

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Session: 2020-2021

A thesis submitted in the partial fulfillment of the requirements for the degree of Master of Science in Fishing and Post-Harvest Technology

Department of Fishing and Post-Harvest Technology,
Faculty of Fisheries

Chattogram Veterinary and Animal Sciences University
Chattogram-4225, Bangladesh

DECEMBER 2022

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December 2022

ACKNOWLEDGEMENTS

All praises are due to the Almighty Allah for blessing me with the strength, aptitude, patience and enabled me to pursue higher education and to complete the thesis for the degree of Master of Science (MS) in Fishing and Post-Harvest Technology.

First, I want to pay heartily gratitude to **Professor Dr. Dr. A.S.M Lutful Ahasan**, Vice-Chancellor, Chattogram Veterinary and Animal Sciences University (CVASU) for giving special opportunity and providing such research facilities.

I would like to pay my sincere regards and thanks to **Prof. Dr. M. Nurul Absar Khan**, Dean, Faculty of Fisheries, CVASU, who introduced master's program in the Faculty of Fisheries and provided update instrument and laboratory for conducting any kind of research.

I would like to express with great pleasure my deepest sense of gratitude, sincere appreciation, deep respect and profound indebtedness to my honored instructor and research supervisor **Dr. Mohammad Rashedul Alam,** Professor, Department of Physiology Biochemistry and Pharmacology, Faculty of Veterinary Medicine, CVASU for giving the opportunity to do research and provide invaluable guidanceand continuous support. I was profoundly motivated by her dynamism, vision, honesty and inspiration. Under her guidance, it was a great pleasure and honor towork and learn.

I feel proud in expressing my regard and immense gratitude to my co- Supervisor, Associate Professor, **Dr. Md. Faisal,** Head, Department of Fishing and Post-Harvest Technology, Faculty of Fisheries, CVASU for his kind co-operation, valuable suggestions, and constructive criticism in improving the quality of the research work.

I am indebted to **Tahsin Sultana**, Assistant Professor, Department of Fishing and Post-Harvest Technology, Faculty of Fisheries, CVASU for her valuable advice, scholastic guidance, and inspiration throughout the research.

The author sincerely thanks all my senior and classmates, specially **Mahfujul Alam Mithu, Sharmin Jahan Shampa, Hasnain Mostari** and the technical staffs of the Department of Fishing and Post-Harvest Technology, CVASU for their encouragement and support during research work.

Finally, I would like to express my cordial thanks to all the academic staffs of CVASU, my loving friends and research students of the Department of Aquaculture for their active assistance during the whole study period.

At last, my heartfelt respects and thanks to my beloved parents for their ultimate understanding, inspirations, moral support, blessings, and endless love to complete thisstudy. Thank you.

The Author

Forhadul islam

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LIST OF ABBREVIATION

S. cinereus	*Stromateus chinensis*
%	Percentage
AOAC	Association of Official Analytical Chemists
BMD	Bone Mineral Density
cm	centimeter
DoF	Department of Fisheries
E	East
EAA	Essential Amino Acid
EDTA	Ethylene diamine tetra acetic acid
FAO	Food and Agriculture Organization
g	Gram
gm	gram
H2O	Water
H_2SO_4	Sulfuric acid
HCL	Hydrochloric acid
L	Liter
mg	milligram
min	Minute
ml	Milliliter
mm	Millimeter
N	North
NaOH	Sodium hydroxide
ºC	Degree celcius
PPM	parts per million
PUFA	Polyunsaturated Fatty Acid
USD	United States dollar
VLDL	Very-low-density lipoprotein

Abstract

In the present study, seasonal variations of biochemical and microbial analysis of five commercially important dried fishes were assessed in monsoon, winter and summer seasons which were collected from Asadganj dried fish market of Chattogram district. The samples were evaluated by proximate composition, biochemical and microbial aspects. In the summer seasons, proximate analysis showed that the mean value of moisture content of Chinese silver pomfret (*Pampus chinensis),* Ribbon fish (*Trichiurus haumela*), Bombay duck (*Harpodon nehereus*), Pama Croaker (*Otolithoides pama*) and Phasa (S*etipinna phasa*) were 6.83 ± 1.83% , 20.17 ± 1.83%, 12.67 ± 1,% 17.33 ± 2.50% and 13.50 ± 3.33% respectively; the protein content were 66.89 ± 3.31%, 68.64 ± 1.88%, 68.25 ± 0.59%, 62.81 ± 0.89% and 65.92 ± 0.59% respectively; the lipid content were 4.75 ± 0.01%, 4.25 ± 0.5%, 3.25 ± 0.01%, 7.25 ± 0.50% and 9.75 ± 0.01% respectively and the ash content were 7.67 ± 1.15%, 5.22 ± 0.38%, 12.89 ± 0.33%, 10.75 ± 0.19% and 10.44 ± 0.19% respectively. In the monsoon seasons, the moisture content were 9.50 ± 2.83%, 21.33 ± 3.5%, 16.67 ± 0.66%, 20.50 ± 0.83% and 16.17 ± 1.66% respectively; the protein content were 65.33 ± 1.47%, 70.19 ± 2.05%, 67.47 ± 0.89%, 63.97 ± 0.67% and 71.17 ± 0.59% respectively; the lipid content were 7.50 ± 0.75%, 3.75 ± 0.5%, 3.50 ± 0.25%, 4.75 ± 0.75%, and 6.75 ± 0.75%respectively and the ash content were 7.56 ± 1.72%, 5.44 ± 0.50%, 12.22 ± 0.66%, 10.44 ± 0.66% and 8.56 ± 0.75%. In the winter season, the moisture content were 8.67 ± 0.19%, 8.30 ± 0.87%, 10.17 ± 0.69%, 13.3 ± 1.17% and 6.00 ± 0.33% respectively, the protein content were 68.64 ± 0.59%, 77.58 ± 1.35%, 68.25 ± 2.35%, 66.31 ± 1.01% and 76.22 ± 4.14% respectively; the lipid content were 10.75 ± 0.25%, 4.75 ± 0.25%, 4.75 ± 0.25%, 6.25 ± 0.01% and 5.25 ± 0.25% respectively and the ash content were 7.44 ± 0.01%, 8.78 ± 0.69%, 12.78 ± 1.07%, 10.89 ± 0.01% and 9.89 ± 3.45% respectively. The bacterial loads of the five dried fish in summer (1.45 × 104, 3.5 × 104, 1.5 × 104, 6.5 × 105 and 3.5 × 104 CFU/g); in the monsoon (4.4 × 105, 6.25 × 105, 3.5 × 105, 1.4 × 106 and 9.5 × 105 CFU/g) and in the summer (2.65 × 105, 3.25 × 105, 3.05 × 105, 9.5 × 105 and 5.5 × 104 CFU/g). Biochemical studies of five dried samples showed that the essential amino acids present in them were Histidine (27.83-315.2 ppm), Leucine (133.90-219.39 ppm), isoleucine (81.33-25173.93 ppm), Lysine (73.18-177.56 ppm), Methionine (11.54 - 82.08 ppm), Valine (101.97-247.18 ppm), Threonine (1.10-23.81 ppm) and Phenylalanine (145.82-411.7 ppm). The Bombay duck contains a small amount of cysteine, while five dried fish have the greatest arginine of any other food. On average the maximum quantity of amino acids is present in ribbon fish. However, the research revealed that marine dry fishes are extremely nutritious and may serve as an alternative to other sources of protein like fresh fish, chicken, beef, etc. and specifically determining the biochemical and microbiological status of five dried fish in the seasonal change of the Asadganj dried fish market.

Key words: Dried fish, Essential amino acid, Proximate composition