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*"The capacity to learn is a gift; the ability to learn
is a skill; the willingness to learn is a choice."*

~Brian Herbert

Declaration

I declare that the thesis entitled "Ethno-medicinal and molecular profiling of fermented beverages consumed by different tribes in North Bengal, India ", has been prepared by me under the supervision of Prof. Arnab Sen, Department of Botany, and co supervisor Dr. Chandra Ghosh , Department of Tea Science ,University of North Bengal. No part of the thesis has formed the basis for the award of any degree or fellowship previously.

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I certify that Miss. Soumita Bhattacharjee has prepared the thesis entitled "Ethno-medicinal and molecular profiling of fermented beverages consumed by different tribes in North Bengal, India", for the award of Ph.D. degree of the University of North Bengal, under my supervision. She has carried out the work at the Department of Botany, University of North Bengal. I may further declare that the results incorporated in this thesis have not been submitted for any other degree elsewhere.

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TO WHOM IT MAY CONCERN

I certify that **Miss. Soumita Bhattacharjee** has prepared the thesis entitled **“ETHNOMEDICINAL AND MOLECULAR PROFILING OF FERMENTED BEVERAGE CONSUMED BY DIFFERENT TRIBES IN NORTH BENGAL, INDIA”**, for the award of Ph.D. degree of the University of North Bengal, under my co-supervision. She has carried out the work at the Department of Botany, University of North Bengal. I may further declare that the results incorporated in this thesis have not been submitted for any other degree elsewhere.

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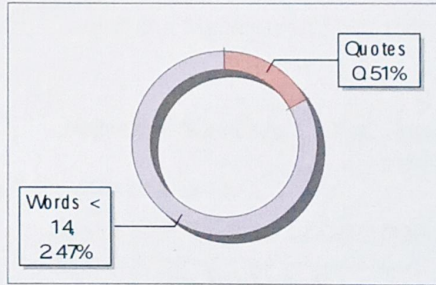
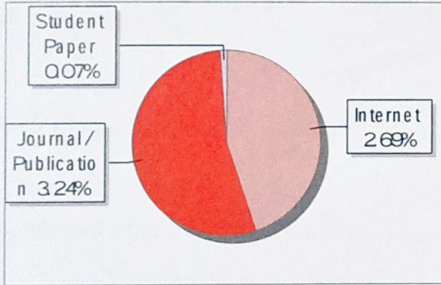
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Submission Information

Author Name Soumita Bhattacharjee
Title Ethno-medicinal and molecular profiling of fermented beverages consumed by different tribes in North Bengal, India
Paper/Submission ID 1354962
Submitted by nbuplg@nbu.ac.in
Submission Date 2024-01-22 16:01:38
Total Pages 178
Document type Thesis

Result Information

Similarity 6%



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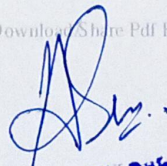
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References/Bibliography Excluded
Sources: Less than 14 Words % Not Excluded
Excluded Source 7%
Excluded Phrases Not Excluded

Database Selection

Language English
Student Papers Yes
Journals & publishers Yes
Internet or Web Yes
Institution Repository Yes

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“With an enthusiastic team, you can achieve almost anything”

-Tahir Shah

This PhD thesis represents the result of my research conducted at the Molecular Cytogenetics Laboratory, Department of Botany, University of North Bengal, spanning nearly five years from 2019 to 2014. Undoubtedly, I would not have completed my research without the assistance and encouragement of others. The five-year journey was no easy feat; it resembled a rollercoaster ride filled with numerous ups and downs. Thankfully, by the grace of the gods, I wasn't navigating this path alone. I had the support of an extended

team of experts who were always ready to guide, inspire, assist, and motivate me. I express my gratitude to them for their invaluable contributions.

First and foremost, I would like to extend my heartfelt gratitude and sincere thanks to my research supervisor, Prof. Arnab Sen, of the Department of Botany at the University of North Bengal. His invaluable guidance, unwavering support, and continual encouragement have been instrumental in my academic journey. It is challenging to

articulate my genuine and deep sense of reverence for him. Prof. Sen has consistently proven to be an approachable individual, ever ready with adept solutions to any critical research problem.

I am also grateful to my Co-supervisor, Dr. Chandra Ghosh, from the Department of Tea Science at the University of North Bengal, for consistently providing assistance in every challenging situation. I express my sincere appreciation to her exceptional classical taxonomic skills, which proved invaluable in identifying and authenticating the plant samples used in the study. Her priceless guidance, steadfast support, and ongoing encouragement have played a pivotal role in shaping my academic journey.

I am deeply grateful to every member of the Toto, Rabha, Lepcha, Bodo, and Koch communities for their cooperation in sharing their traditional products with me. A special

acknowledgment goes to Sushanta Toto, Sanchita Toto, Late Lakhi Toto, and their family. Additionally, I extend my appreciation to Mitali Rabha, Ratan Rai, Pema Doma Lepcha, and Tshering Lepcha for their valuable contributions in providing information about the fermented brew and their consistent support throughout the research.

A heartfelt thank you goes to the coordinator of UGC (SAP) DRS-III and DST FIST (SANC. No. SR/FST/LS-I/2021/900) in the Department of Botany for providing the necessary instrumental facilities. I also sincerely appreciate Professor A. Saha, the Head of the Department of Botany at the University of North Bengal.

I extend my gratitude to Professor A. Saha, the Department Head. Additionally, I appreciate the support of the other faculty members, Dr. S. C. Roy, the late Dr. P. Mandal, Dr. M. Chowdhury, Dr. S. Roy, and Dr. P. Mathur, along with the entire staff of

the Department of Botany at NBU, for their steadfast support throughout. I would like to express my sincere gratitude to Prof. Abhaya Prasad Das Retired Professor of Department of Botany, University of North Bengal.

I extend my gratitude to Dr. S. Roy sir for allowing me to use his Laboratory infrastructure. His profound scientific expertise serves as a constant source of inspiration, and I hold great admiration for his distinguished and helpful nature.

I express my gratitude to Dr. S. Sah, assistant professor from the Department of Botany at Kurseong College, University of North Bengal for generously providing me access to his laboratory infrastructure to carry out my research work with Yeast models.

I express deep gratitude to my teacher, Dr. Souvik Mitra, Assistant Professor at Taki Govt. College, for consistently inspiring me to maintain a positive

approach throughout my five-year journey.

I extend my thanks to my two highly enthusiastic teachers, Dr. Sukanta Majumdar and Dr. Archan Bhattacharya, for their tremendous support.

I express my gratitude to Dr. T. Saha assistant professor from the Department of Zoology at NBU, for generously providing me access to his laboratory infrastructure and animal resources to carry out my research work with rodent models.

I am also thankful to Mr. Animesh Dey, for always being kind and supportive enough in my journey. I also extend my gratitude to Miss Mousikha Lala for always being a vital part of this journey and. I also acknowledge to my few friends, Nitesh Ghatani, Niraj Rai, Sourav Roy Manas Modak and Anasuya Karjee who were consistently offer encouragement during numerous

ACKNOWLEDGEMENT

challenging situations.

I extend my thanks to my loving juniors Sutapa Datta, Sumit Prasad Sah for love and support.

Another group of people whose enormous support and encouragement I should acknowledge , Dr Indrani Sakar, Sandipan Ghosh, Dr Reha Labar and Saroja Chettri.

I am thankful to my senior laboratory colleagues, Dr. Pallab Kar, Mr. Arnab Kumar Chakroborty and Dr. G. Sen.

I express my gratitude to Dr. Subhasis Paul for consistently providing assistance. I expand my thanks to Mr. Basudev Singha for his constant support and fun loving nature. I also wish to thank my fellow junior researchers of Department of Botany and Department of Tea Science.

I express my deep gratitude for my colleagues at the Department of Botany, University of North Bengal.

I also want to convey my thanks to my two younger brothers, Prashant Gupta

and Tshering Lepcha, for always being ready to help me.

I am grateful and express my thanks to Department of Biotechnology, Government of India and SVMCM, Govt. of West Bengal for providing me the fellowship to carry out my research work.

Here, I am reaching the conclusion, recognizing the essential source of life energy my family. I am really obligated to my parents Mr. Debasish Bhattacharjee and Miss Mira Bhattacharjee . They consistently provide immense support in every aspect, helping me reach my goals. I extend my gratitude to my elder sister Moumita Bhattacharjee and Mr. Samrat Sarkhel , brother in law for their constant love and support.

Foremost, I attribute everything to the Almighty God for providing me with the wisdom, health, and strength needed to undertake and successfully complete this research task.

ACKNOWLEDGEMENT

Once again, I express heartfelt appreciation to each and every individual directly or indirectly involved in the completion of this substantial task. I extend my apologies to those whose names I couldn't mention individually.

Soumita Bhattacharjee

[Soumita Bhattacharjee]

Preface

“Humanity will draw more good than evil from new discoveries

-Marie Curie

The present work represents an extensive exploration into the fascinating realm of fermented ethnic beverages, a subject that intertwines traditional practices, microbiological processes, and cultural significance. This research endeavors to unravel the intricate dynamics of various fermented ethnic beverages, shedding light on the microbial communities, biochemical transformations, and sensory attributes that contribute to their unique qualities.

The motivation behind this work stems from the rich cultural heritage associated with fermented ethnic

beverages across different regions and communities. These beverages, often deeply rooted in tradition, not only serve as vital components of social and ritualistic practices but also embody the collective wisdom and craftsmanship of generations. The comprehensive study presented herein encompasses a diverse array of fermented ethnic beverages, including but not limited to traditional alcoholic and non-alcoholic concoctions. By employing state-of-the-art analytical techniques, microbiological assays, and sensory evaluations, this thesis seeks to elucidate the intricate

PREFACE

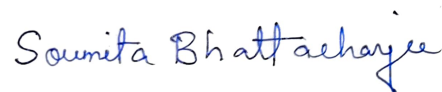
relationships between raw materials, fermentation processes, and the final product's characteristics. The work is structured to provide a holistic perspective, delving into the historical and cultural contexts surrounding fermented ethnic beverages, elucidating the microbiological intricacies of the fermentation process, and exploring the sensory profiles that define these beverages. Moreover, the research aims to contribute to the broader scientific understanding of fermentation, microbiology, and food science, with potential applications in both academic and industrial settings.

As the culmination of several years of dedicated research, this work is a testament to the collaborative efforts of

various individuals and institutions.

The guidance and support of my advisors, colleagues, and collaborators have been instrumental in shaping the trajectory of this research. Furthermore, the cooperation and insights shared by communities and individuals involved in the production of fermented ethnic beverages have enriched the depth and authenticity of this study.

It is my sincere hope that this scientific exploration into fermented ethnic beverages not only advances our understanding of these culturally significant concoctions but also inspires further research and appreciation for the diverse traditions that contribute to the global tapestry of



[Soumita Bhattacharjee]

List of Figures

Figures.	Title	Page #
2.1	Schematic diagram of the beneficial activity of the fermented drinks	43
3.1	PIC used during the field survey	46
3.2	Map of Toto inhabited area. Totopara is situated in West Bengal, India	50
3.3	Flow chart for Eu preparation	51
3.4	Ethnic Preparation of Eu by the Toto tribal people	51
3.5	Study area of Sukhia pokjri, West Bengal, India	52
3.6	A Govt document dated back to 1967 for raksi preparation	53
3.7	Preparation of Harchur Raksi through natural fermentation method	55
4.1	Different types of fermented tribal ethnic beverages	93
4.2	Starter culture of different ethnic drinks	92
4.3	Envelope released by Indian post to promote the Toto tribal group	96
4.4	Herbarium of the selected plants used in the starter culture of different ethnic fermented drinks	100
4.5	Heat map representing the qualitative assay of different extracts of Eu	102
4.6	Antioxidant activity of Eu	104
4.7	Antioxidant activity of Eu	106
4.8	Antioxidant activity of HR	108
4.9	Antioxidant activity of TR	110
4.10	Antioxidant activity of methanol plant extracts	110
4.11	Antioxidant activity of methanol plant extract	112
4.12	Antimicrobial screening of different plants	113
4.13A	Haemolytic activity of Eu sample,	115
4.13B	Erythrocyte membrane stabilising activity	115
4.14	Measurement of cell viability (MTT) assay on Eu	115
4.15	Chromatogram of Eu Sample	118
4.16	Molecular docking of Eu compounds	123
4.17A	<i>In silico</i> molecular docking with anti-inflammatory protein Nrf2 with Sesamin	125
4.17B	<i>In silico</i> molecular docking with Covid 19 (SARS-CoV-2) spike protein with Sesamin	125
4.18	A network analysis of Eu-derived compounds of the sample with a special emphasis on gastrointestinal cancer	131
4.19	Yeast isolates from starter culture of Eu	133
4.20	Microscopic view and budding pattern of <i>Saccharomyces cerevisiae</i>	133
4.21	Scanning electron microscopy view of <i>Saccharomyces cerevisiae</i> (TY1, TY2, TY3)	134

Figures.	Title	Page #
4.22	Yeast isolates from moi (amylolytic starter culture of Eu) TY1, TY2, and TY3 amplified for the ITS gene using primers ITS1 and ITS4	136
4.23	MLSA phylogenetic tree of Yeast isolates	137
4.24A	Rare fraction curve of Starter culture of Eu	138
4.24B	The receiver operating characteristic (ROC) plot analysis of the sample	138
4.25	Microbial abundance of the sample	140
4.26	Rare fraction curve of Starter culture of chokot	143
4.27	Microbial abundance of the starter culture of chokot	145
4.28	Network based Reverse ecology analysis of Eu microbiota: Competition and Complementation	147
4.29	Schematic representation of the activity of Eu and starter culture (Moaa/moi/moe).	145
4.30	Heat map on Complementation of Eu microbiota	148
4.31	Heat map on Competition of Eu microbiota	149
4.32	Heat map on Complementation index of Chokot microbiots	149
4.33	Heat map on Competition index of Chokot microbiots	150
4.34	Cluster of Orthologous Genes (COG) of TWMS1	151
4.35	KEGG annotation of the read abundance	152
4.36	Abundance of different Phylum in the TWMS1 sample	153
4.37	Abundance of different Order in the TWMS1 sample	154
4.38	Abundance of different family in the TWMS1 sample	155
4.39	Genera abundance of the sample TWMS1	155
4.40	Species abundance in TWMS1	157
4.41	Krona Visualization of A: Bacteria and B: Fungi, Sankey Visualization of C: Bacteria and Fungi	158
4.42	Body weight measurement by week of rats, male (A) and female (B)	163
4.43	Photomicrograph of sections of female kidneys and livers	168
4.44	Photomicrograph of sections of male kidneys and livers in control and treated groups	169
4.45	Alpha diversity of NF1 and BF1, B: Picrust if both NF1 and BF1	170
4.46	KEGG metabolic pathway prediction of A: NF1 and B: BF1 sample	172
4.47	Heat map clustering and visualization of both the sample NF1 and BF1	173
4.48	Heat map visualization of Core microbiome of both the sample NF1 and BF1	173
4.49	Graphical elastration of Sub acute toxicity study and metagenomic study of gut microbiome	174

List of Tables

Table	Title	Page#
2.1	List of the different fermented drinks through out the World	40-41
3.1	Collected sites of 16 different beverages from different study area	47
4.1	Six different types of fermented drinks with their alcohol content	92-93
4.2	List of the plants and their parts used in the preparation of Eu with their ethnomedicinal value	94
4.3	Nutritional profiling of Eu (An ethnic brew of Toto tribe)	103
4.4	Inhibition properties of different fermented liquor extracts in membrane stabilisation and protein denaturation	117
4.5A	List of compounds identified in Eu sample by GC-MS analysis	119
4.5B	Molecular docking score of the Eu compounds	124
4.6	Biological importance of the compounds identified in Eu sample	119
4.7	Bioactivity of the compounds obtained from GC-MS analysis of Chokot	120
4.8	GC-MS analysis of the HR and their bioactivity	121-122
4.9	Docking score of different compounds of Harchur raksi and their binding score	126
4.10	Morphological features of Yeast isolates	132
4.11	Biochemical analysis of the Yeast isolates	135
4.12	Relative abundance of the major microflora present in the starter culture	150
4.13	Effect of extract of Eu on relative organ weight in female and male Wistar rats treated for 28 consecutive days	163
4.14	Effect of Eu extract on serum biochemical parameters	164-165
4.15	Effect of sample extract on haematological parameters	166-167

List of Appendices

	Title	Page #
Appendix A	Publications	I
Appendix B	Genome projects	II
Appendix C	Buffers & Chemicals used for DNA isolation, Culture media	III-IV
Appendix D	Software used in the present study Web server used in present study	V
Appendix E	Approval of Animal Ethical Committee	VI