

### Candidate's Declaration

I hereby declare that the thesis entitled “**Physico-chemical, Antibacterial, Antioxidant, Bio Compatibility, and Biodegradation Studies of Washed and Dyed Eri, Muga, and Pat Silk Fabric**” has been submitted to the **Department of Molecular Biology and Biotechnology, Tezpur University**, Tezpur, Assam in partial fulfillment for the award of the degree of Doctor of Philosophy in Molecular Biology and Biotechnology is an original work undertaken by me. Further, I declare that no part of this work has been previously considered for the award of any other degree from any University, Institute, or other organization.

Date: 14/6/24  
Place: Tezpur

  
14/6/24  
(Minhaz Ahmed)



## TEZPUR UNIVERSITY

(A Central University established by an Act of Parliament)

Department of Molecular Biology and Biotechnology  
NAPAAM, TEZPUR-784028, ASSAM, INDIA

Dr. Jyoti Prasad Saikia, *Ph.D.*  
Assistant Professor  
Department Molecular Biology and  
Biotechnology

E-mail: jyoti06@tezu.ernet.in

### CERTIFICATE OF THE PRINCIPAL INVESTIGATOR

This is to certify that the thesis entitled “**Physico-chemical, Antibacterial, Antioxidant, Bio-Compatibility, And Biodegradation Studies of Washed and Dyed Eri, Muga, And Pat Silk Fabric**” submitted to the School of Sciences, Tezpur University in part fulfilment for the award of the degree of Doctor of Philosophy in Department of Molecular Biology and Biotechnology, is a record of original research work carried out by **Ms. Minhaz Ahmed** under my personal supervision and guidance.

All help received by her from various sources has been duly acknowledged. No part of this thesis has been reproduced elsewhere for the award of any other degree.

Date: 14/6/24  
Place: Tezpur

  
(Jyoti Prasad Saikia)

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### List of abbreviation

Km <sup>2</sup>	Square kilometre
N	North
E	East
m	Meter
°C	Degree Celsius
%	Percentage
GI	Geographical Indication
RBC	red blood cells
HP	percentage of hemolysis
BCE	Before the Common Era
AD	Anno Domini
MT	Metric ton
Rs.	Rupees
GOI	Government of India
Kg	Kilogram
BTCA	butane tetra carboxylic acid
UV	Ultra Violet
SF	silk fibroin
DPPH	2-diphenyl-1-picrylhydrazyl
TEWL	trans-epidermal water loss
SUR	detergent powder
TID	laundry detergent
RIN	detergent bar
LOCAL	indigenous soap ball
REVI	liquid fabric stiffener
COMF	fabric conditioner
EZY	gentle liquid detergents
VOX	detergent booster and stain remover
ACT. CHARCOAL	Activated charcoal
TA	Tannic Acid
g	gram
ml	milli Liter
rpm	revolutions per minute
MLR	material to Liquid ratio
SEM	Scanning electron microscope
HSL	Hue, Saturation and Luminosity
RGB	Red Green Blue
$\Delta E$	color difference
FTIR	Fourier Transform-Infrared Spectroscopy

B	Bleached
BM	Bleached-Mordant
BMD	Bleached-Mordant-Dye (pre-mordant)
BDM	Bleached-Dye-Mordant (post-mordant)
SIM	Simultaneous Dyeing
BMDM	Bleached-Mordant-Dye-Mordant
BD	Bleached-Dye
ISO	International Organization of Standardization
nm	nano meter
PBS	phosphate buffer saline
OD	optical density
DMSO	Dimethylsulfoxide
µm	Micro meter
MTCC	Microbial Type Culture Collection and Gene Bank
CFU	Colony forming Unit
LAF	Laminar Air Flow
AATCC	American Association of Textile Chemists and Colorists
WHC	Water Holding Capacity
keV	kiloelectronvolt
KBr	Potassium Bromide
Del E	Delta E (colour difference)
ROS	Reactive Oxygen Species
Cur+TA	Curcumin + Tannic acid
Gen+Cur	Gentamicin+Curcumin
GU	Glossiness Unit