Dedicated to

My Parents

Er. Pranjal Dhar and Mrs. Sarmila Dhar

My sister Mrs. Piyali Dhar Roy

&

My Husband Dr. Binayak Sen

DECLARATION BY CANDIDATE

I hereby declare that the thesis entitled "**Valorization of Queen Pineapple (*Ananas comosus*) Waste of Northeast India**" submitted to the School of Engineering, Tezpur University in partial fulfillment for the award of the degree of Doctor of Philosophy in Food Engineering and Technology, is a record of bonafide research work accomplished by me under the supervision of Prof. Sankar Chandra Deka.

All assistance received from various sources has been appropriately acknowledged. No part of this thesis has been submitted elsewhere for the award of any other degree.

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CERTIFICATE OF THE SUPERVISOR

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

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List of abbreviation

2-NBDG	2-[N-(7-nitrobenz-2-oxa-1,3-diazol-4-yl) amino]-2-deoxy-d-glucose
AEDF	Alkaline extracted dietary fibre
AMC	Amino-4-methyl coumarin
ANOVA	Analysis of variance
AOAC	Association of Official Analytical Chemists
AUC	Area under curve
BBD	Box-Behnken design
BP	Biological process
C/N	Carbon to nitrogen ratio
CAC	Cholesterol Absorption Capacity
CEC	Cation exchange capacity
CF	Cell function
DB	Dry basis
DEGs	Differentially expressed genes
DF	Dietary fibre
DM	Diabetes mellitus
DMSO	dimethyl sulfoxide
DNS	3,5-Dinitrosalicylic acid
DPP IV	Dipeptidyl Peptidase-IV
EA	Emulsion activity
EMDF	Enzyme Modified Dietary Fiber
ES	Emulsion stability
FAO	Food and Agriculture Organization
FBS	Fetal bovine serum
FT-IR	Fourier transform infrared spectroscopy
GAC	Glucose adsorption capacity
GDRI	Glucose dialysis retardation index
GO	Gene Ontology
H_2	Hydrogen
HI	hydrolysis index
HRT	Hydraulic retention time

IDF	Insoluble dietary fiber
k	Kinetic constant
MC	Moisture content
MEM	Minimum Essential Medium
MF	Molecular function
MFI	Mean fluorescence intensity
MIDF	Modified Insoluble Dietary Fiber
MPF	Mango peel flour
MTT	(3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2-H-tetrazoliumbromide)
NC	Negative control
OHC	Oil holding capacity
PBS	Phosphate Buffer Solution
PC	Positive Control
PCA	Principal component analysis
PDP	Pineapple waste-dried powder
pGI	Predicted glycaemic index
RDI	Recommended daily intake
RDS	Rapidly digestible starch
RS	Resistant starch
RSM	Response surface methodology
SC	Swelling capacity
SD	Standard Deviation
SDF	Soluble dietary fiber
SDS	Slowly digestible starch
SEM	Scanning electron microscopy
SIR	Substrate to inoculum ratio
SSF	Simultaneous saccharification and fermentation
STD	Standard
TA	Titrable acidity
TDF	Total dietary fiber
TGA	Thermogravimetric analysis
TS	Total solid
TS	Total starch

TSS	Total soluble solids
UAE	Ultrasound-assisted extraction
UAE DF	Ultrasound-assisted extracted dietary fiber
VS	Volatile solid
WHC	Water holding capacity
WRC	Water Retention Capacity
WSC	Water Solubility Capacity
XRD	X-ray diffraction

List of Symbols

T	Temperature
t	time
%	Percentage
/	Per
<	Lesser than
>	Greater than
℃	Degree celcius
µg	Microgram
µL	Microlitre
µm	Micrometre
µmol	Micromolar
a*	Redness
b*	Yellowness
cm	Centimetre
g	Gram
h	Hour
L*	Lightness
mg	Milligram
mm	Millimeter
mM	Millimolar
p	p-value
R^2	Correlation coefficient
U	Unit
v	Volume
w/v	Weight by volume
w/w	Weight by weight
α	Alpha
β	Beta
∞	Infinity
Σ	Sigma
θ	Theta