Declaration

The candidate certificate that the thesis entitled **"Instant controlled pressure drop assisted production of curcumin rich turmeric powder for its use in infusion drink"** is being submitted to School of Engineering Tezpur University in part fulfilment for the award of the degree of Dictor of Philosophy in the Department of Food Engineering and Technology is a record of research work accomplished by me under the supervision of Dr. Manuj Kumar Hazarika. Professor, Department of Food Engineering and Technology.

All assistance received from various sources have been appropriately acknowledged

No part of the thesis has been submitted elsewhere for the award of any other degree

Swapnil Prashant Gautam

Date: 24-12-2024 (Swapnil Prashant Gautam)

Place: Tezpur Reg No. TZ189880

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CERTIFICATE

This is to certify that the thesis entitled "Instant Controlled Pressure Drop Assisted Production of Curcumin rich Turmeric Powder for its use in Infusion Drink" submitted to the School of Engineering, Tezpur University in partial fulfilment for the award of the degree of Doctor of Philosophy in Food Engineering and Technology, is a record of research work carried out by Swapnil Prashant Gautam under my supervision and guidance.

All assistance received by his from various sources have been duly acknowledged.

No part of this thesis has been submitted elsewhere for award of any other degree.

MKHazarika
Supervisor

Date: 24-12-2024 (Dr. Manuj Kumar Hazarika)

Place: Tezpur

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Swapnil Prashant Gautam

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List of abbreviation

ICPD=Instant controlled pressure drop technology
IDASC= Instant decompression assisted steam curing
DIC= Instant controlled pressure drop
CC= Curcumin content
DT= Temperature of drying
TT= Treatment time
IDASC-HAD=Instant decompression assisted steam cuing assisted hot air drying
IDASC-RWD=Instant decompression assisted steam curing assisted refractance of window drying
ICPD-HAD= Instant controlled pressure drop assisted hot air drying
ICPD-RWD= Instant controlled pressure drop assisted refractance of window drying
TPC= Total phenolic content
TFC= Total flavonoid content
YV = Yellowness value
DPPH= 2,2 Diphenyl 1 pycryldrazyl
FRAP= Ferric reducing antioxidant potential
HTST= High treatment short time
MPa = Mega pascal
BDNF = Brain-derived neurotrophic factor
IMC = Initial moisture content
POP = polyphenol oxidase
HPLC =High performance liquid chromatography
HPTLC = High performance thin layer chromatography
SEM = Scanning electron microscopy
RSM = Response surface methodology
BBD = Box-Behnken
CCD = Central composite design
CCCD = central composite circumscribed design
LDL = Low density lipoprotein
ASTA = American Spice Trade Association
SRVTA = Steam releasing valve towards atmosphere
PDR = Pressure decompression rate
MMD = Mass mean diameter
AMD = Average mean diameter
APS = Average particle size
PSO = Particle swarm analysis
CBWC = Conventional boiling water curing
TTC = Total tannin content
XRD = X-ray diffraction