

Dr. ROBBARTS NONGMAITHEM

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Nationality: Indian

Education:

Jan 2014-April 2024 - **P.hD in Biological Engineering** **Supervisor: Prof. Venkatesh Meda**
University of Saskatchewan, Saskatoon, Canada **CGPA:8.65**

Processing Characteristics and Utilization of Germinated Lentil for Product Development

The research was focused on production of new lentil based extrudate product, having higher nutritive value and increased bio-availability of the nutrients. This work includes various optimization of unit operations such as germination to increase the nutritional quality of lentils; drying (microwave, microwave-vacuum, hot air) for production of lentil flour; and extrusion to produce RTE products based on germinated lentils. Optimization were based on chemical analysis such as total phenolic content, total antioxidant activity and *in-vitro* starch digestibility and physical analysis such as hardness, extrudate density, expansion ratio, water absorption index and water solubility index. Following the successful development of a novel extrudate, a techno-economic study was carried out to determine whether small-scale industrial production of lentil extrudates was feasible.

Jul 2010-Dec 2012- **M.Tech in Food Process Engineering** **Supervisor: Prof. P.S. Rao**
Indian Institute of Technology, Kharagpur, India **CGPA:8.65**

Effect of High pressure processing on physicochemical and freezing properties of Black Tiger Shrimp (*Penaeus monodon*)- Master of Technology thesis

The work was focused on the evaluation of physicochemical properties of high hydrostatic pressure treated black tiger shrimp. Crude protein, fat and Thiobarbituric acid index (TBA) were chemical analysis considered during optimization of HPP parameter while physical parameter such as hardness, chewiness, gumminess, adhesiveness and crunchiness were considered. The effect of high hydrostatic pressure on freezing rate, freezing loss and thawing loss of black tiger shrimp were also studies.

Aug 2006-April 2010- **B.Tech in Agricultural Engineering** **Supervisor: Er. A.I. Singh**
CAEPHT, Central Agricultural University, Gangtok, India **CGPA:7.99**

Study on effect of different packaging methods on shelf life and quality of Sikkim mandarins and passion fruits - Bachelor of Technology project

The idea of the work was to examine the effects of different packaging methods viz. shrink wrap packaging, vacuum packaging and normal packaging with polypropylene on quality aspects (sensory and textual analysis) as well as shelf life of Sikkim mandarin and passion fruit.

Experience:

Jan 2020 - Dec 2023- **Research and Development Manager at Sharma Enterprise, Imphal, India**

Production of NGARI (an indigenous fermented fish product). I designed to produce hygienic ngari by following key food safety measures such as HACCP, GMP, etc. Apart from production, various research activities were also conducted (my responsibilities):

- Design of experiment, data processing, modeling and interpretation
- Sensory and consumer testing of the product
- Conduct shelf life experiments
- Establishing correlation between sensory and instrumental parameters.

Jan 2015-2016- **Teaching Assistant** for graduate and undergraduates level for Biological engineering at University of Saskatchewan, Canada

Dec 2012 - Dec 2013- **Senior Research Fellow, Central Agricultural University, Imphal, India**

I worked as Senior Research Fellow under Department of Science and Technology (DST) project entitled "*Development and evaluation of drying system for important spices of North Eastern State*". I took major role in designing and development of prototype of a new dryer model. My responsibilities were:

- Modeling and design of dryer using MATLAB and AutoCAD
- Production of prototype of newly design dryer
- Evaluation of the dryer viz. efficiency of dryer, chemical analysis of the product produced using the dryer
- Document and communicate science-based reports

Paper Publications:

- Effect of extrusion process on germinated lentil (*Lens culinaris*) based snack foods: impact on starch digestibility, physio-functional, and antioxidant properties. Nongmaithem, R., V. Meda, T. Niranjana, R.M. Shukla, R.C. Paradhan and M. Dwivedi. *Measurement: Food*. 2024, 13: 100132
- Effect of microwave and microwave-vacuum drying on drying kinetics of germinated lentils and its energy consumption. Robbarts Nongmaithem and Venkatesh Meda. *Ecology, environment and conservation*. 2017, 23(3), 1405-1413.
- Optimization of microwave vacuum drying of germinated lentils and its effect on total phenolic content, antioxidant activity and starch digestibility. Robbarts Nongmaithem and Venkatesh Meda. *International Journal of Food Studies*. 2017 (6), 44-55.
- Lentils and its Utilization: A Review. Robbarts Nongmaithem and Venkatesh Meda. *Research & Reviews: Journal of Food Science and Technology*. 2016; 5(1): 34-44.
- Comparative study of chemical properties of *Soibum* – A traditional fermented Bamboo shoot product and its biological investigation. S. Anil Singh, H. Dayanidhi Singh, Robbarts Nongmaithem, T.C. Bora and N. Rajmuhon Singh. *International journal of Bioscience Biochemistry and Bioinformatics*. 2011; 1(2) 114-118.

Workshops/conference/ summer course (selected):

- Poster presentation at CSBE/SCGAB Conference 2018, Guelph, Canada, July 22-25, 2018; "*Techno-economic evaluation for the production of extruded products of germinated lentils*". Robbarts Nongmaithem and Venkatesh Meda.
- Oral presentation at 2015 ASABE Annual International Meeting, New Orleans, Louisiana, USA, July 26 – 29, 2015. *Effect of microwave-vacuum drying of germinated lentils on antioxidant activity and potential glycaemic index*. Robbarts Nongmaithem and Venkatesh Meda.
- Poster presentation at CSBE/SCGAB Annual General Meeting and Technical Conference, Edmonton, Canada, July 5-8, 2015. *Effect of microwave vacuum drying on drying kinetics and physical properties of germinated lentils*. Robbarts and Venkatesh Meda.
- Oral presentation at Technological Interventions for Sustainable Hill Development. GBPUA&T, Pantnagar, India. June 17-19, 2013. *Effect of high pressure processing on freezing of black tiger shrimp (*Panaeus monodon*)*. Robbarts Nongmaithem, Barjindar Kaur and P.S. Rao.

Summer Courses/Training/Certificates:

- Attended summer course at **Tel Aviv University, Tel Aviv, Israel**. July 6-18, 2014, with scholarship from Global Institute of Food Security, Canada.
Course taken: Introduction to food Security; Food Security and Public Health; Food security policy and economics
- **Teaching Assistant (TA)** training - marking and evaluation at Ron and Jane Graham School of Professional Development, College of Engineering, University of Saskatchewan, Saskatoon, Canada. September 23, 2016.
- Certificate of Training-**Biosafety**. University of Saskatchewan, January 8, 2014
- Certificate of Training- **Laboratory Safety**. University of Saskatchewan, January 17, 2014

Fellowship/ Scholarship/National exams:

- Biological Engineering Graduate Scholarship, University of Saskatchewan-2017
- International Student and Study Abroad Centre (ISSAC)- Travel award-2016
- International Dean's Scholarship, University of Saskatchewan 2014-2016
- Qualified Indian Council of Agricultural Research - National Eligibility Test (**ICAR-NET**)-2015
- Global Institute of Food Security, Canada-2014
- MHRD Scholarship (India) – 2010 to 2012 (Qualified **GATE-2010**)

Extracurricular activities:

- Vice-president for "Canadian Society for Bioengineering: Saskatchewan Student Chapter". 2017-18
- Member of Canadian Society of Bioengineering (CSBE): since 2017
- Member of American Society of Agricultural and Biological Engineering (ASABE): since 2017
- Member of Indian Society of Agricultural Engineering, 2006-2010.
- Participated 100m race in 9th All India Inter Agricultural Universities Sports and Games Meet, 2008.
- Cleared National Cadet Corps (India), Certificate- A & B.

Skills:

- **Software:** MATLAB, Design expert, AUTOCAD, SPSS, Microsoft Office (word, excel, powerpoint)
- **Equipment/Instruments operated:** ICP-MS, Microwave-vacuum dryer, Infrared dryer, hot air dryers, High pressure processing machine, Spectrophotometer, Scanning Electron Microscope (SEM), HPLC, GC, Plate heat exchanger, Refractometer, Hunterlab colorimeter, Viscometer/rheometer, Texture Analyzer, Data logger, Microwave Digester