

Institute of Nutrition, Mahidol University (INMU)

999 Phutthamonthon 4 Rd., Salava, Phutthamonthon

Name: Dr. Nilesh Prakash Nirmal

E-mail address: nilesh.nir@mahidol.ac.th

Current position: Global Talent Researcher

Education: Ph.D. in Food Science and Technology

Research Interest and Expertise:

- Plant bioactive or plant-derived extract as a natural alternative to food/feed additive.
- Functional food product development.
- Preparation of biodegradable/ edible film incorporation with bioactive compound (Nanoscience).
- Food nanotechnology (Nanoemulsion).

Research Experiences

Thailand

Position: Foreign Expert

Duties:

- Research
- Writing a research grant proposal
- Publish research article

2015-2018 Organization: Queensland Alliance for Agriculture and Food

Innovation, The University of Queensland, Australia

Position: UQ-research Fellow

Duties:

- Extraction of phenolic compounds from Australian native plants and their application as food or feed additives.
- Evaluation of nutritional and functional properties of Australian native plant and fruit infusions.
- Determination of antimicrobial and antioxidant activity.
- Preparation of natural additive formulation.

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- Food presentation to the customer for sensory analysis.
- Liaise with food company clients.
- Demonstrate natural food additive concept and importance.
- Report writing.

Food pilot plant- freeze dryer, hot-air oven dryer, centrifuge, modified atmospheric packaging (MAP), vacuum packaging

2011-2013 Organization: Prince of Songkla University, Thailand

Position: Research Fellow

Duties:

- Isolation and preparation of brazilin-rich extract by using the chromatographic technique.
- Antimicrobial, antioxidant, and anti-inflammatory assay in a different model system.
- Supervised graduate student.
- Report writing.

Training:

2018 First Aid and CPR,

Apex Training Institute (RT0-32100), Brisbane

2017 Food Safety Supervision

(Hygienic practices for food safety and safe food handling practices), TAFE, Brisbane

Publications International:

2022

- 1. Nirmal, N. P., Santivarangkna, C., Rajput, MS., Benjakul, S. and Maqsood, S. (2022) Valorization of fish by-products: Sources to end-product applications of bioactive hydrolysate. *Comprehensive Review in Food Science and Technology*. 21: 1803-1842.
- 2. Nirmal, N. P., Santivarangkna, C., Benjakul, S. and Maqsood, S. (2022) Fish protein hydrolysate as health promoting ingredient-Recent update. *Nutrition Reviews*. 80: 1013-1026.

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- 3. Rathod, NB., Nirmal, NP., Pagarkar, A., Ozogul, F. and Rocha, JM. (2022) Antimicrobial impacts of microbial metabolites on the preservation of fish and fishery products: A review with current knowledge. *Microoragnism*. 10: 773
- 4. Ghosh, S., Nag, M., Lahiri, D., Sarkar, T., Pati, S., Kari, ZA., Nirmal NP., Edinur, HA. and Ray, R. (2022) Engineered biofilm:innovative nextgen strategy for quality enhancement of fermented foods. *Frontiers in Nutrition*. 9: 808630
- 5. Nirmal, N.P., Mereddy, R., Webber, D. and Sultanbawa, Y. (2022) Biochemical composition and aroma of Melaleuca citrolens Barlow (*Myrtaceae*) leaves from different regions of Australian Northern Territory. *South African Journal of Botany*. 145: 78-84.
- 6. Mallick, S., Nag, M., Lahiri, D., Pandit, S., Sarkar, T., Pati, S., Nirmal, NP., Edinur, HA., Kari, ZA., Zai, MRA. and Ray, R (2022) Engineered nanotechnology: An effective therapeutic platform for the chronic cutaneous wound. *Nanomaterials*. 12: 778.
- 7. Aslam, S., Akhtar, A., Nirmal, N., Khalid, N. and Maqsood S. (2022) Recent developments in starch based delivery systems of bioactive compounds: Formulation and applications. Food Engineering Review, 1-21

2021

- 8. Nirmal, N.P., Mereddy, R. and Maqsood, S. (2021) Recent development in emerging technologies for beetroot pigment extraction and its food applications. *Food Chemistry*-356, 129611.
- 9. Ujifard, A.,Benjakul, S., Nirmal, N. P. and Bashirzadeh, S. (2021) Chemical, nutritional, microbial, and sensory characteristic of fish sauce *Suragh* from Hormozgan, Iran. Journal of Aquatic Food Product Technology-DOI:10.1080/10498850.20201866727.
- 10. Nirmal, N.P., Webber, D., Mereddy, R. and Sultanbawa, Y. (2021) Biochemical, antioxidant and sensory evaluation of Davidsonia pruriens and Davidsoina jerseyana fruit infusion. *Food Chemistry*.-342-128349
- 11. Olatunde, O.O., Della Tan, S.L., Shiekh, K.A., Benjakul, S. and Nirmal, N.P. (2021) Ethanolic guava leaf extracts with different chlorophyll removal processes: Anti-melanosis, antibacterial properties and the impact on qualities of Pacific white shrimp during refrigerated storage. *Food Chemistry-341-128251.*

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2020

- 12. Rajput, M. S., Nirmal, N. P., Rathore, D. and Dahima, R. (2020) Dimethyl fumurate exerts neuroprotection by modulating calcineurin/NFAT1 and NF κ B dependent BACE1 activity in A β_{1-} 42 treated neuroblastoma SH-SY5Y cells. *Brain Research Bulletin-* 165, 97-107
- 13. Rajput, M. S., Nirmal, N. P., Rathore, D. and Dahima, R. (2020) Dimethyl fumurate mitigates tauopathy in Aβ-induced neuroblastoma SH-SY5Y cells. *Neurochemical Research* 45 (11), 2641-2652
- 14. Nirmal, N. P., Santivarangkna, C., Rajput, M.S. and Benjakul, S. (2020) Trends in shrimp processing waste utilization: An industrial prospective. *Trends in Food Science and Technology*-103, 20-35.

2018

- 15. Alderees, F., Mereddy, R., Webber, D., Nirmal, N. and Sultanbawa,Y. (2018) Mechanism of action against food spoilage yeasts and bioactivity of *Tasmannia lanceolata*, *Backhousia citriodora* and *Syzygium anisatum* plant solvent extracts. *Foods*, 7 (11) 179.
- 16. Nirmal, N.P., Webber, D., Mereddy, R. and Sultanbawa, Y (2018) Biochemical and functional properties of indigenous Australian herbal infusions. *Food Bioscience*, 26, 133-138.
- 17. Nirmal, N. P., Mereddy, R., Li, L. and Sultanbawa, Y (2018) Formulation, characterization and antibacterial acvtivity of lemon myrtle and anise myrtle essential oil in water nanoemulsion. *Food Chemistry*, 254, 1-7.

2017

- 18. Rajput, M. S., Sarkar, P. D. and Nirmal, N. P. (2017) Inhibition of DPP-4 activity and neuronal atrophy with genistein attenuates neurological deficits induced by transient global cerebral ischemia and reperfusion in streptozotocin induced diabetic mice. *Inflammation*, doi:10.1007/s10753-017-0509-5.
- 19. AlAsmari, F., Nirmal, N., Chaliha, M., Williams, D., Mereddy, R., Shelat, K. and Sultanbawa, Y. (2017) Physiochemical and fungal profile of Saudis four commercial fresh date (Phoenix dactylifera L) cultivars. *Food Chemistry*, 221, 644-649.
- 20. Mereddy, R., Chan, A., Fanning, K., Nirmal, N., Sultanbawa, Y., (2017) Betalain rich functional extract with reduced salts and nitrate content from red beetroot (*Beta vulgaris* L.) using membrane separation technology. *Food Chemistry*, 215, 311-317.

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2016

- 21. Ahmad, M., Nirmal, N.P., Danish, M., Chuprom, J., Jafarzedeh, S. (2016) Characterization of composite films fabricated from collagen/chitosan and collagen/soy protein isolate for food packaging applications. *RSC Advances* 6 (85), 82191-82204.
- 22. Ahmad, M., Nirmal, N.P.Chuprom, J. (2016) Molecular characteristics of collagen extracted from the starry triggerfish skin and its potential in the development of biodegradable packaging film. *RSC Advances*, 6, 33868-33879.
- 23. Prasad, R.G.S.V., Aparna, R.S.L. and Nirmal, N.P. (2016) An injectable in-situ conducting thermosensitive gel for controlled delivery of vancomycin in osteomyelitis treatment and bone regeneration *Science of Advanced Materials*, 8,1470-1477.

2015

- 24. Ahmad, M., Nirmal, N.P. and Chuprom, J. (2015) Blend film based on fish gelatin/ curdlan for packaging applications: spectral, microstructural and thermal characteristics. *RSC Advances*, 5, 99044-99057.
- 25. Nirmal, N., Rajput, M., Sarkar, P., Sinha, S. and Gupta, A. (2015) Amino acid esters prodrugs of an arylalkonic acid COX inhibitor: synthesis and biopharmaceutical and pharmacological evaluation. *Journal of Taibah University for Science*, 9 (4), 455-464.
- 26. Sarkar, P. D., Rajput, M. S. and Nirmal, N. P. (2015) Tailored methods for preclinical assessment of fibrinolytic agents *in vitro*. *Journal of Chemical and Pharmaceutical Research*, 7: 1130-1135.
- 27. Nirmal, N. P., Rajput, M. S., Prasad, R.G.S.V., and Ahmad M. (2015) Brazilin from *Caesalpinia sappan* heartwood and its pharmacological activities: A review. *Asian Pacific Journal of Tropical Medicine*, DOI: 10.1016/S1995-7645(14)60355-2, 421-430.
- 28. Ahmad, M., Hani, N.M., Nirmal, N. P., Mohtar, N. F. and Romli, S.R. (2015) Optical and thermomechanical properties of composite films based on fish gelatin/rice flour fabricated by casting technique. *Progress in Organic Coatings*, 84:115-127.
- 29. Nirmal, N. P. and Panichayupakaranant, P. (2015) Antioxidant, antibacterial and antiinflammatory activity of standardized *Caesalpinia sappan* heartwood extracts. *Pharmaceutical Biology*. 9: 1339-1343.
- 30. Nirmal, N. P., Benjakul, S., Ahmad, M., Arfat, Y. and Panichayupakaranant, P. (2015) Undesirable enzymatic browning in crustaceans: causative effects and its inhibition by phenolic compounds. *Critical Reviews in Food Science and Nutrition*. 55, 1992-2003.

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2014

- 31. Nirmal, N. P., Prasad, R.G.S.V. and Keokitichai S. (2014) Wound healing activity of standardized brazilin rich extract from *Caesalpinia sappan* heartwood. *Journal of chemical and Pharmaceutical Research*, 6: 195-201.
- 32. Nirmal, N. P. and Laxman, R. S. (2014) Enhanced thermostability of fungal alkaline protease by using different additives. *Enzyme Research*. MS No.109303.
- 33. Nirmal, N. P. and Panichayupakaranant, P. (2014) Anti-*Propionibacterium acnes* assay guided purification of brazilin and preparation of brazilin rich extract from *Caesalpinia sappan* heartwood. *Pharmaceutical Biology*. 52: 1204-1207.

2013

34. Patidar, D., Rajput, M.S., Nirmal, N.P. and Savitri W. (2013) Implementation and evaluation of adverse drug reaction monitoring system in a tertiary care teaching hospital in Mumbai, India. *Interdisciplinary Toxicology*, 6, 41-46.

2012

- 35. Nirmal, N.P., and Benjakul, S. (2012) Effect of green tea extract in combination with ascorbic acid on the retardation of melanosis and quality changes of Pacific white shrimp during iced storage. *Food and Bioprocess Technology*, 5, 2941-2951.
- 36. Nirmal, N.P., and Benjakul, S. (2012) Biochemical properties of polyphenoloxidase from cephalothorax of Pacific white shrimp (*Litopenaeus vannamei*). *International Aquatic Research*, 4, 6.
- 37. Ahmad, M., Benjakul, S., Sumpavapol, P., and Nirmal, N. P. (2012) Quality changes of sea bass slices wrapped with gelatin film incorporated with lemon grass essential oil. *International Journal of Food Microbiology*, 155, 171-178.
- 38. Nirmal, N.P., and Benjakul, S. (2012) Inhibition kinetics of catechin and ferulic acid on polyphenoloxidase from cephalothorax of Pacific white shrimp (*Litopenaeus vannamei*). *Food Chemistry*, 131, 569-573.

2011

- 39. Nirmal, N.P., and Benjakul, S. (2011) Inhibitory effect of mimosine on polyphenoloxidase from cephalothorax of Pacific white shrimp (*Litopenaeus vannamei*). *Journal of Agricultural and Food Chemistry*, 59, 10256-1060.
- 40. Nirmal, N. P., Shankar, S., and Laxman, R. S. (2011) Fungal protease: an overview. *International Journal of Biotechnology and Biosciences*, 1, 1-40.

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- 41. Nirmal, N.P., and Benjakul, S. (2011) Retardation of quality changes of Pacific white shrimp by green tea extract treatment and modified atmosphere packaging during refrigerated storage. *International Journal of Food Microbiology*, 149, 247-253.
- 42. Nirmal, N.P., and Benjakul, S. (2011) Inhibition of melanosis formation in Pacific white shrimp by the extract of lead (*Leucaena leucocaphala*) seed. *Food Chemistry*, 128, 427-432.
- 43. Nirmal, N.P., and Benjakul, S. (2011) Use of green tea extracts for inhibition of polyphenoloxidase and retardation of quality loss of Pacific white shrimp during iced storage. *LWT- Food Science and Technology*, 44, 924-932.

2010

44. Nirmal, N.P., and Benjakul, S. (2010) Effect of catechin and ferulic acid on melanosis and quality of Pacific white shrimp subjected to prior freeze-thawing during refrigerated storage. *Food Control*, 21, 1263-1271.

2009

- 45. Nirmal, N.P., and Benjakul, S. (2009) Melanosis and quality changes of Pacific white shrimp (*Litopenaeus vannamei*) treated with catechin during iced storage. *Journal of Agricultural and Food Chemistry*, 57, 3578-3586.
- 46. Nirmal, N.P., and Benjakul, S. (2009) Effect of ferulic acid on inhibition of polyphenoloxidase and quality changes of Pacific white shrimp (*Litopenaeus vannamei*) during iced storage. *Food Chemistry*, 116, 323-331.

Invited Book Chapters

- 1. Selvamuthukumaran, M., Nirmal, N. P. and Sajid Maqsood. (2021). Chapter-3- <u>High hydrostatic pressure processing for dairy products in Non-thermal Processing Technologies for the dairy Industry, CRC Press (Taylor & Francis Gropu, LLC).</u>
- 2. Nirmal, N. P. and Santivarangkna, C. (2021). Chapter-9- <u>Bio preservation of dairy products: A non-thermal processing & preservation approach for shelf life extension of dairy products in Non-thermal Processing Technologies for the dairy Industry, CRC Press (Taylor & Francis Gropu, LLC).</u>
- 3. Prasad, RGSV. Nirmal, NP. And Hoque, EM. (2014). Chapter -11- 3D Organ Printing-Future Designer Organs, , in Nanotechnology Vol. 12 *Bioimaging*, Studium Press LLC, USA, pp. 285-310.

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