

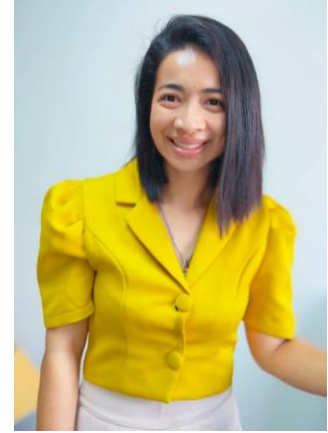
Dr. Supatra Karnjanapratum

Working place:

1. Faculty of Agro-Industry, Chiang Mai University, Chiang Mai, 50110
Thailand

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EDUCATION

Doctor of Philosophy (Ph.D.)

Food Science and Technology
Prince of Songkla University, Songkhla
GPA: 4.00

Thesis:

Title: Development of gelatin hydrolysate from skin of unicorn leatherjacket with enhanced bioactivities

February, 2016

Master of Science (M.Sc.)

Applied Marine Biotechnology and Engineering
Gangneung-Wonju National University, Rep. of Korea
GPA: 4.31/4.5

Title: Structural characteristics and Bioactivities of Sulfated Polysaccharides from Green Seaweeds, *Monostroma nitidum* and *Capsosiphon fulvescens*

August, 2011

Bachelor of Science (B.Sc.)

Food Science and Technology (HONS.)
Chiang Mai University, Chiang Mai
GPA: 3.67/4.0

Title: Characterization of physicochemical properties and standardization of Longan honey

March, 2009

SCHOLARSHIPS/GRANTS

- **Basic Research 64 (94556)**, 2021, Thailand Science Research and Innovation, Thailand.
- **Future Skill New Career Thailand: Reskill/Upskill/Newskill program 2019, 2020**, Ministry of Higher Education, Science, Research and Innovation, Thailand.
- **Research Grant for New Scholar (MRG)**, 2019-2021, Thailand Research Fund, Thailand.
- **Academic Melting Pot (KREF206220)**, 2019-2020, KMITL Research and Innovation Service, KMITL, Thailand.
- **Grant for Researcher (KREF046212)**, 2019-2020, KMITL Research and Innovation Service, KMITL, Thailand.

- **Postgraduate Scholarship (KREF126201)**, 2019-2021, KMITL Research and Innovation Service, KMITL, Thailand.
- **Research Grant for New Academic Staff (KREF186014)**, 2017-2018, KMITL Research and Innovation Service, KMITL, Thailand.

TRAINING COURSES

1. **Enzyme in Food Industry**, Food and Drug Administration, 28 Nov. 2017
2. **Patent Landscape and Patent Mapping**, Prince of Songkla University, 22-23 Jan. 2018
3. **Thai Cuisine to World Kitchen Food Innovation**, Dusit Thani College Pattaya, 26 Feb.-2 Mar. 2018
4. **Home Brewing**, Department of Food Science, Faculty of Science, Burapha University, 10 and 17 Mar. 2018
5. **Total volatile composition analysis in food by GC-O-MS**, The Department of Science Service, 19-20 Mar 2018
6. **Food and Catering**, Suan Dusit University Trang, 29 Apr.-6 May 2018
7. **Intellective Property Development**, Level 1, 7-11 May 2018
8. **Intellective Property Development**, Level 2, 15-18 May 2018
9. **Food Production as Demi-Chef**, Dusit Thani College Pattaya, 23-28 Dec. 2018
10. **Educational Quality Assurance**, Amara Hotel, 30 Apr. 2019
11. **Risk Control and Management**, Faculty of Agro-Industry, King Mongkut's Institute of Technology Ladkrabang, 4 Apr. 2019
12. **Human Ethic for Research**, King Mongkut's Institute of Technology Ladkrabang, 13-14 Jan. 2020
13. **Retort Supervisor**, King Mongkut's University of Technology Thonburi, 2-6 Mar. 2020
14. **Authentic Pork Meat Products**, Pathum Thani Livestock Product Research and Development Center Division of Livestock Products, Pathum Thani, 15-17 Dec 2020.
15. **Design Thinking for Food Product Development**, National Food Institute, 18 Dec. 2020.
16. **Fundamental Art of Plating and Plate Decoration by Sauce**, TipaRos Challenge 2021 Rising Star Chef, Online Seminar, 12 October 2021.
17. **Basic Bread, Cake, Choux and Éclair, Sweet tart, Croissant and Danish**, Knowhow Bake, 2022, Private course, 5-13 February 2022.
18. **Fellow (FHEA), UK Professional Standards Framework for teaching and learning support in higher education [PR256882]**, AdvanceHE, 29 March 2023.

RESEARCH EXPERIENCES

Biochemical techniques

- Development of dessert formula (cookie, bread, dried fruit)
- Characterisation of protein pattern using Polyacrylamide Gel Electrophoresis (PAGE)

- Purification of enzyme using Aqueous Two Phase System (ATPS)
- Fractionation of protein and polysaccharide by ion exchange and size exclusion chromatography
- Antioxidative analysis using *in vitro* chemical assay
- Purification and identification of peptide
- Preparation and characterization of surimi and fish based products
- Characterization of chemical and structural properties of polysaccharides extracted from seaweeds
- Chemical modification of polysaccharide (sulfate content and molecular weight)
- Characterization of chemical and physical properties of honey

Molecular and Immunological technique

- Cell culture, Anticancer and immunomodulatory activities
- ELISA (Enzyme-Linked Immunosorbent Assay)
- RT-PCR (Reverse Transcription-Polymerase Chain Reaction)

PUBLICATIONS

1. Petsong, K., Kaewthong, P., Kingwascharapong, P., Nilswan, K., Karnjanapratum, S., Tippayawat, P. Potential of jackfruit inner skin fibre for encapsulation of probiotics on their stability against adverse conditions. *Scientific Reports*, 2023, 13(1), 11158
2. Indriani, S., Karnjanapratum, S. Nirmal, N.P. Nalinanon, S. amphibian skin and skin secretion: an exotic source of bioactive peptides and its application. *Foods*, 2023, 12(6), 1282.
3. Indriani, S., Benjakul, S., Quan, T. H., Sitanggang, T. H., Chaijan, M., Kaewthong, P., Petcharat, T., Karnjanapratum, S., Effect of different ultrasound-assisted process modes on extraction yield and molecular characteristics of pepsin-soluble collagen from Asian bullfrog skin. *Food Biopro. Technol.*, 2023, <https://doi.org/10.1007/s11947-023-03118-w>
4. Yen, T.T., Quan, T.H., Nhung, H.T.H., Karnjanapratum, S., Benjakul, S. Development of antioxidative red dragon fruit bar by using response surface methodology for formulation optimization. *App. Food Res.*, 2022, 2(2), 100173.
5. Karnjanapratum, S., Kaewthong, P., Indriani, S., Petsong, K., Takeungwongtrakul, S. Characteristics and nutritional value of silkworm (*Bombyx mori*) pupae-fortified chicken bread spread. *Sci Repts*, 2022, 12(1), 1492
6. Indriani, S., Sae-leaw, T., Benjakul, S., Karnjanapratum, S., Nalinanon, S. Impact of different ultrasound-assisted processes for preparation of collagen hydrolysates from Asian bullfrog skin on characteristics and antioxidative properties. *Ultrason. Sonochemistry*, 2022, 89, 106163.
7. Panpipat, W., Chaijan, M., Karnjanapratum, S., Quan, T.H., Petcharat, T. Quality Characterization of Different Parts of Broiler and Ligor Hybrid Chickens, *Foods*, 2022, 11(13), 1929.

8. Indriani, S., Benjakul, S., Kishimura, H., Karnjanapratum, S., Nalinanon, S., Impact of extraction condition on the yield and molecular characteristics of collagen from Asian bullfrog (*Rana tigerina*) skin. *LWT - Food Sci Technol*, 2022, 162,113439.
9. Karnjanapratum, S., Kaewthong, P., Petsong, K., Takeungwongtrakul, S. Characteristics and nutritional value of silkworm (*Bombyx mori*) pupae-fortified chicken bread spread. *Sci Reps*, 2022, 12, 1492.
10. Ismail, N., Shahrim Ab. Karim, M., Adibah Che Ishak, S., Mursyid Arsyad, M., Karnjamapratum, S., Sirison, J. The Malay's traditional sweet, dodol: a review of the Malaysia's heritage delicacy alongside with the rendition of neighbouring countries. *J Ethnic Food*, 2021, 8,19
11. Petcharat, T., Chaijan, M., Karnjanapratum, S. Effect of furcellaran incorporation on gel properties of sardine surimi. *Int J Food Sci Technol.*, 2021, 56(11), pp. 5957–5967
12. Kingwascharapong, P., Chaijan, M., Karnjanapratum, S. Ultrasound-assisted extraction of protein from Bombay locusts and its impact on functional and antioxidative properties. *Sci Reps*, 2021, 11(1), 17320.
13. Karnjanapratum, S., Supapvanich, S., Kaewthong, P., Takeungwongtrakul, S. Impact of steaming pretreatment process on characteristics and antioxidant activities of black garlic (*Allium sativum* L.). *J Food Sci Technol*, 2021, 58(5), 1869–1876.
14. Indriani S, Nalinanon S, Karnjanapratum S. Impact of hexane defatting on characteristics of *Patanga succincta* L. powder and its application on nutritional improvement of biscuit stick. *J Insects as Food Feed* 2021, 7(2), 215–232.
15. Petcharat T., Benjakul S., Nalinanon S., Karnjanapratum S. Ultrasound-assisted extraction of collagen from clown featherback (*Chitala ornata*) skin: Yield and molecular characteristics. *J Sci Food Agri* 2021, 101(2), 648–658
16. Karnjanapratum S, Benjakul S. Asian bullfrog (*Rana tigerina*) skin gelatin extracted by ultrasound-assisted process: Characteristics and in-vitro cytotoxicity. *Int J Biol Macromol* 2020, 148; 391-400.
17. Indriani S, Bin Ab Karim MS, Nalinanon S, Karnjanapratum S. Quality characteristics of protein-enriched brown rice flour and cake affected by Bombay locust (*Patanga succincta* L.) powder fortification. *LWT Food Sci Technol* 2020, 119; 108876.
18. Kingwascharapong, P., Arisa, K., Karnjanapratum, S., Tanaka, F., Tanaka, F. Effect of gelatin-based coating containing frog skin oil on the quality of persimmon and its characteristics. *Sci Hortic (Amsterdam)* 2020, 260; 108864.
19. Kingwascharapong P, Karnjanapratum S, Tanaka F, Tanaka F. Impact of Asian Bullfrog (*Rana tigerina*) skin oil on growth inhibition of *Colletotrichum gloeosporioides* (*in vitro*) and its prediction modeling. *2020 Food Sci Technol Res* 2020, 26(1); 47-52.
20. Takeungwongtrakul, S., Karnjanapratum, S., Kaewthong, P., Nalinanon, S. Change in fatty acid profile, volatile compounds and FTIR spectra of samrong seed oil during storage. *Int J Agric Technol*, 2020, 16(2), pp. 475–484

21. Karnjanapratum, S, Kaewthong, P, Takeungwongtrakul, S, Sae-leaw, T, Hong, JH, Nalinanon, S. Production of fiber hydrolysate from bamboo shoot with antioxidative properties by enzymatic hydrolysis. *Curr Appl Sci Technol* 2019, 19(3); 225-234
22. Benjakul S, Karnjanapratum S, Pisuchpen S. Effect of antioxidants and packing conditions on storage stability of cereal bar fortified with hydrolyzed collagen from seabass skin. *Ital J Food Sci* 2019, 31(1); 347-366.
23. Singh, A., Benjakul, S., Karnjanapratum, S. Use of ultrasonicated squid ovary powder as a replacer of egg white powder in cake. *J Food Sci Technol* 2019, 56(4); 2083-2092.
24. Karnjanapratum S, Niluwan K, Benjakul S, Sumpavapol P. Oil from Asian bullfrog (*Rana tigerina*) skin: Antimicrobial activity and its application in emulsion gelatin-based film. *CMUJ Natural Sci* 2019, 18(1); 68-79.
25. Karnjanapratum S, Benjakul S. Coconut oil based cookies fortified with bio-calcium: characteristics and nutritional compositions. *Carpath J Food Sci Technol* 2018, 10(4); 79-89.
26. Benjakul S, Karnjanapratum S. Characteristics and nutritional value of whole wheat cracker fortified with tuna bone bio-calcium powder. *Food Chem* 2018, 259; 181-87.
27. Benjakul S, Chantakun K, Karnjanapratum S. Impact of retort process on characteristics and bioactivities of herbal soup based on hydrolyzed collagen from seabass skin. *J Food Sci Technol* 2018, 55; 3779-3791.
28. Benjakul S, Karnjanapratum S, Visessanguan W. Hydrolyzed collagen from *Lates calcarifer* skin: its acute toxicity and impact on cell proliferation and collagen production of fibroblasts. *Inter J Food Sci Technol* 2018, 53(8); 1871-79.
29. Benjakul, S, Karnjanapratum S, Visessanguan W. Production and characterization of odorless antioxidative hydrolyzed collagen from seabass (*Lates calcarifer*) skin without descaling. *Waste Biomass Valori* 2018, 9(4); 549-559.
30. Karnjanapratuma S, Sinthusamrana S, Sae-leawa T, Benjakul S, Kishimura H. Characteristics and gel properties of gelatin from skin of Asian bullfrog (*Rana tigerina*). *Food Biophys* 2017, 12; 289-98.
31. Sae-Leaw T, Karnjanapratum S, O'Callaghan YC, O'Keefe MB, FitzGerald, RJ, O'Brien NM, Benjakul S. Purification and identification of antioxidant peptides from gelatin hydrolysate of seabass skin. *J Food Biochem* 2017, 41(3); e12350
32. Karnjanapratum S, Benjakul S. Production of antioxidative Maillard reaction product from gelatin hydrolysate of unicorn leatherjacket skin. *J Aquat Food Prod Technol* 2017, 26(2); 148-162.
33. Karnjanapratum S, Benjakul S, O'Brien M N. Antioxidative and sensory properties of instant coffee fortified with galactose-fish skin gelatin hydrolysate Maillard reaction products. *Carpath J Food Sci Technol*, 2017, 9; 90-9.
34. Karnjanapratum S, Benjakul S, O'Callaghan YC, O'Keefe MB, FitzGerald RJ, O'Brien, NM. Purification and identification of antioxidant peptides from gelatin hydrolysates of unicorn leatherjacket skin. 2017, *Ital J Food Sci*, 19; 158-69.

35. Karnjanapratum S, O'Callaghan YC, Benjakul S, O'Brien MN. Antioxidant, immunomodulatory and antiproliferative effects of gelatin hydrolysate from unicorn leatherjacket skin. *J Sci Food Agri* 2016, 96; 3220–26.
36. Karnjanapratum S, O'Callaghan YC, Benjakul S, O'Brien MN. *In vitro* cellular bioactivities of Maillard reaction products from sugar-gelatin hydrolysate of unicorn leatherjacket skin system. *J Funct Food* 2016, 23; 87-94.
37. Karnjanapratum S, Benjakul S. Characteristics and antioxidative activity of gelatin hydrolysates from unicorn leatherjacket skin as affected by autolysis-assisted process. *J Food Process Pres* 2015, 39; 915-26.
38. Karnjanapratum S, Benjakul S. Antioxidative gelatin hydrolysates from unicorn leatherjacket skin as affected by prior autolysis. *Int Aquat Res* 2015, 7; 101-14.
39. Karnjanapratum S, Benjakul S. Glycyl endopeptidase from papaya latex: Partial purification and use for production of fish gelatin hydrolysate. *Food Chem* 2014, 165; 403-11.
40. Karnjanapratum S, Benjakul S. Cryoprotective and antioxidative effects of gelatin hydrolysate from unicorn leatherjacket skin. *Int J Refrig* 2014, 49; 69-78.
41. Tabarsaa M, Karnjanapratuma S, Cho ML, Kim J-K, You SG. Molecular characteristics and biological activities of anionic macromolecules from *Codium fragile*. *Int J Biol Macromol* 2013, 59; 1-12.
42. Karnjanapratum S, Benjakul S, Kishimura H, Tsai Y-H. Chemical compositions and nutritional value of Asian hard clam (*Meretrix lusoria*) from the coast of Andaman Sea. *Food Chem* 2013, 141; 4138-45.
43. Karnjanapratuma S, Tabarsaa M, Cho ML, You SG. Characterization and immunomodulatory activities of sulfated polysaccharides from *Capsosiphon fulvescens*. *Int J Biol Macromol* 2012, 51; 720–29.
44. Kim JK, Cho ML, Karnjanapratum S, Shin IS, You SG. *In vitro* and *in vivo* immunomodulatory activity of sulfated polysaccharides from *Enteromorpha prolifera*. *Int J Biol Macromol* 2011, 49; 1051-58.
45. Karnjanapratum S, You SG. Molecular characteristics of sulfated polysaccharides from *Monostroma nitidum* and their *in vitro* anticancer and immunomodulatory. *Int J Biol Macromol* 2011, 48; 311-18.

INTELLECTUAL PROPERTIES

- 1) Non-phosphate compound for white Pacific shrimp treatment. Thailand Patty Patent: 1603002515. 8 December 2016.
- 2) Production process of collagen hydrolysate from fish skin. Thailand Patty Patent: 1603002520. 8 December 2016.
- 3) Cookie fortified with bio-calcium. Thailand Patty Patent: 1703000728. 1 May 2016.
- 4) Color extraction by vegetable oil. Thailand Patty Patent: 1903001172. 10 May 2016.
- 5) Bamboo shoot fiber hydrolysate. Thailand Patty Patent: 1903001597. 19 June 2019.
- 6) Wax and coat for fruit from frog skin oil. Thailand Patty Patent: 1903002146. 22 August 2019.

7) Ready to eat bread spread from edible insect. Thailand Patty Patent: 2103001589. 8 October 2021.

SCIENTIFIC PRESENTATIONS

- 1) Poster Presentation title “Molecular characteristics of sulfated polysaccharides from *Monostroma nitidum* and their *in vitro* anticancer and immunomodulatory activities”, 2010 Annual Meeting of Korean Society of Food Science and Technology, Incheon, Korea 16th - 18th May, 2010.
- 2) Poster Presentation title “Immunomodulatory activities of sulfated polysaccharides from green seaweed *Capsosiphon fulvescens*”, Green and Personalized Foods International symposium and annual Meeting, Daegu, Korea 27th-29th October, 2010.
- 3) Poster Presentation title “Immunomodulatory activities of sulfated polysaccharides from green seaweed *Capsosiphon fulvescens*”, Medical & Bio Material Research Consortium at Kangwon National University, Gangwon, Korea 28th January, 2011.
- 4) Poster Presentation title “The effects of chemical modifications on water extractable polysaccharides from *Capsosiphon fulvescens* on biological activities”, 2011 Annual Meeting of Korean Society of Food Science and Technology, Deagu, Korea 8th-10th June, 2011.
- 5) Poster Presentation title “The effects of chemical modifications on water extractable polysaccharides from *Capsosiphon fulvescens* on biological activities”, 12th Asean Food conference 2011, Bangkok, Thailand 16th - 18th June, 2011.
- 6) Poster Presentation title “Nutritive value and chemical compositions of Asian hard clam (*Meretrix lusoria*) from the coast of Andaman Sea”, 13th ASEAN Food Conference (AFC2013). The MAX Atria, Singapore Expo, 9th-11th September, 2013.
- 7) Poster Presentation title “Characteristics and antioxidative activity of gelatin hydrolysates from unicorn leatherjacket skin as affected by autolysis-assisted process”, RGJ-Ph.D. Congress XV. Jomtien Palm Beach Hotel and Resort, Pattaya, 28th-30th May 2014.
- 8) Poster presentation title “Antioxidative Maillard reaction products derived from gelatin hydrolysate of unicorn leatherjacket skin”, ICFSN 2015: 17th International Conference on Food Science and Nutrition. Holiday Inn London, Wembly, London, 28th-29th June 2015.
- 9) Oral presentation title “Antioxidative activity enhancement of gelatin hydrolysate from unicorn leatherjacket skin using Maillard reaction”, 113th TRF Seminar Series in Basic Research: From Basic Research to Applications. Seminar Room, Faculty of Science, Prince of Songkla University, Thailand, 25th September 2015.
- 10) Oral presentation title “Fortification of antioxidative galactose-fish skin gelatin hydrolysate Maillard reaction product in instant coffee”, International Conference on Food and Applied Bioscience. The Empress Hotel, Chiang Mai, Thailand, 4th-5th February 2016.
- 11) Poster presentation title “Oil from Asian bullfrog (*Rana tigerina*) skin: Antimicrobial activity and its application in emulsion gelatin-based film.”, International Conference on

Food and Applied Bioscience (FAB 2018), Empress Hotel, Chiangmai, Thailand, 1st-2nd February 2018.

- 12) Poster presentation title “Antimicrobial Activity of Oil Extracted from *Rana Tigerina* Skin and Its Impact on Gelatin-based Film”, The 3rd International Conference on Agriculture and Agro-Industry 2018 (ICAAI2018), Mae Fah Luang University, Chiang Rai, Thailand, 15th-17th November 2018.

WORK EXPERIENCES

1. **Job Title (Position):** Specialist, Culinary Science and Food Innovation
Date of employment: 15th May 2023- 24th July 2023
Employer and address: Food Innovation and Packaging Center, Chiang Mai University, Chiang Mai, 50110 Thailand

2. **Job Title (Position):** Lecturer, Professional Culinary Arts Program
Date of employment: 2022-2023
Employer and address: Professional Culinary Arts Program, Tourism and Hospitality Industry Department, School of Management, Walailak University

3. **Job Title (Position):** Lecturer, Chairperson (Division of Culinary Science and Foodservice Management)
Date of employment: 2017-2021
Employer and address: School of Food Industry, King Mongkut's Institute of Technology Ladkrabang, Ladkrabang, Bangkok, Thailand

4. **Job Title (Position):** Assistance Researcher
Date of employment: March 2016-November 2017
Employer and address: Prof. Dr. Soottawat Benjakul, Faculty of Agro-Industry, Prince of Songkla University, Hat Yai, Songkhla, Thailand