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KANYASIRI RAKARIYATHAM

Professional Summary

Food science researcher with biochemistry background and specialty in bioactives from food and food by-products as functional ingredients for health support. I have experienced in the area of investigation of plant and marine bioactives and using diet-based strategies for disease prevention. In addition, I am currently conducting research to improve shelf-life and nutritional value of food lipid and protein by using bioactives recovered from food by-products and using sustainable technologies such as ultrasound and microwave processing.

Employment Experience

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| Jan 2020 – Present | Lecturer Faculty of Agro-Industry Chiang Mai University (CMU), Thailand |
| Sept 2017 – Sept 2019 | Post-Doctoral Associate National Engineering Research Center of Seafood Dalian Polytechnic University (DPU), China |
| Aug 2013 – May 2017 | Research Associate (RA) Dept. Food Science, University of Massachusetts (UMASS), Amherst, MA, USA |
| Aug 2013 – May 2017 | Tutor/ Conversation Partner (Independent Language Learning Program; Thai) Five College Language Program, UMASS Amherst, MA, USA |
| Jan 2009 – Dec 2010 | Teaching Associate (TA) Dept. of Chem and Biochem, California State University Fullerton (CSUF) |
| Aug 2008 – Dec 2010 | Employee Dept. of Chem and Biochem, CSUF |
| Mar 2006 – Apr 2008 | Research Assistant (RA) Science and Technology Service Center, CMU, Thailand |

Education

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| 2017 | Ph.D. in Food Science Program at University of Massachusetts Amherst (UMASS), USA |
| 2011 | M.Sc. in Chemistry (Biochemistry) at California State University Fullerton (CSUF), USA |
| 2007 | B.Sc. in Biochemistry and Biochemical Technology (First class honor degree, gold medal) Chiang Mai University (CMU), Thailand |

Certification, and Trainings

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| 2021 | A certificate in “Creating a new generation of researchers” 2 nd generation National Research Council of Thailand (NRCT) and Chiang Mai Rajabhat University |
| | A certificate in Agro-Industrial Businessman Supporting Activities 2 nd generation Agro Beyond Academy by Department of Industry Promotion, Ministry of Industry |
| 2017 | A Certificate in Food Safety and Preventive Control Alliance (FSPCA) Preventive Control for Human Food Institute for Food Safety and Health; International Food Protection Training Institute; Association of Food and Drug Officials Training location: UMASS Amherst |
| 2016 | A Certificate in Sensory Evaluation The New Jersey Agricultural Experiment Station, Office of Continuing Professional Education, Rutgers University, New Brunswick, New Jersey |
| | A Certificate in Labeling Requirements and Implications for Food Marketed in the U.S. (2-day training); Institute of Food Technologists (IFT), Chicago, Illinois |
| | Training in Business Foundations Series for Scientists and Engineers Isenberg School of Management, UMASS Amherst |
| 2013 | A Certificate in Hazard Analysis and Critical Control Points (HACCP) UMASS Amherst, Covance Lab Inc., and International HACCP Alliance |

Honors, and Awards

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| ----- DURING POST-DOCTORAL PROGRAM (DPU CHINA) ----- | |
| 2019 | An award certificate for giving a plenary lecture in the 2019 International Non-Thermal Food Processing Symposium, Dalian China |
| 2018 | A certificate for an outstanding researcher (Postgraduate researcher), National Engineering Research Center of Seafood, DPU |
| ----- DURING PH.D. PROGRAM (UMASS AMHERST) ----- | |
| 2017 | Travel grant from American Chemical Society (ACS), Division of Agricultural and Food Chemistry to attend ACS Conference in San Francisco |
| 2016 | Travel grant from American Chemical Society (ACS), International Student Chapter to attend ACS Conference in Philadelphia |
| 2016 | Travel grant from Dept. of Food Science, UMASS Amherst to attend International Food Technology (IFT) Conference in Chicago |
| 2015 | ACS Student Chapter Award |
| 2015 | Runner-up of Francis Scholarship Competition, Dept. of Food Science, UMASS Amherst |
| ----- DURING M.SC. PROGRAM (CSU FULLERTON) ----- | |
| 2010 | Associated Student Incorporation (ASI) Grant, CSUF |
| 2009 | Book Scholarship Award, CSUF |
| ----- DURING B.SC. PROGRAM (CMU THAILAND) AND PRE-UNDERGRAD PROGRAM ----- | |
| 2008 | Honorable Distinction Award: Prof. Dr. Tab Nilanithi Foundation, Thailand. |
| 2004 -2007 | Gold Medal Award, CMU |

Publication (International peer reviewed articles)

- Zhu M., Rong X., **Rakariyatham K.**, Lai G., Zhang H., Granato D., and Zhang L. (2023). "Characterization of black tea stems and leaves using multiple-spectral analysis of ¹H NMR, UV-Vis, and FTIR coupled with multivariate statistics". *Innovative Food Science and Emerging Technologies* (submitted)
- Long P., Rakariyatham K., Ho C., and Zhang L. (2023). "Thearubigins: Formation, structure, health benefit and sensory property". *Trends in Food Science & Technology*. 13:37-48.
- Kanha N., Osiriphun S., **Rakariyatham K.**, Klangpetch W., and Laokuldilok T. (2022). "On-package indicator films based on natural pigments and polysaccharides for monitoring food quality: a review". *Journal of the Science of Food and Agriculture*. DOI:10.1002/jsfa.12076
- Rattanathanan Y., Kanha N., Osiriphun S., **Rakariyatham K.**, Klangpetch W., and Laokuldilok T. (2022). "Changes in content of antioxidants and hydrolytic stability of black rice bran after heat- and enzymatic stabilizations and degradation kinetics during storage". *Journal of Food Processing and Preservation*. DOI: 10.1111/jfpp.16795
- Huang M., Han Y., Li L., **Rakariyatham K.**, Wu X., Gao Z. and Hang X. (2022). "Preventive effects of non-extractable phenolics from strawberry against inflammation and colon cancer". *Food Chemistry*. 16(374): 131759.
- Rakariyatham K.**, Lu T., Xie H., Yu Z., Li D., Liu Z., Shen Y., Zhou D., and Zhu B. (2021). "Synergistic effects of longan (*Dimocarpus longan*) peel extracts and food additives on oxidative stability of tuna oil". *LWT- Food Science and Technology*. 152(4):112275.
- Wang S., Li J., Zhao Q., Lv D., and **Rakariyatham K.** (2021), "The effect of frying process on lipids in small yellow croaker (*Larimichthys polyactis*) and frying oil". *Journal of Aquatic Food Product Technology*. 3(1):83-95.
- Wang Z., Liu X., Xie H., Liu Z., **Rakariyatham K.**, Yu C., Shahidi F., and Zhou D. (2021). "Antioxidant activity and properties of scallop protein hydrolysate and its functions on emulsifying system and *in vitro*". *Food Chemistry*. 344: 128566.
- Liu Z., Li D., Song L., Liu Y., Yu M., Zhang M., **Rakariyatham K.**, and Shahidi F. (2020). "Effects of proteolysis and oxidation on mechanical properties of sea cucumber (*Stichopus japonicus*) during thermal processing and storage and their control". *Food Chemistry*. 330: 127248.
- Shen Y., Lu T., Liu X., Zhao M., Yin F., **Rakariyatham K.**, and Zhou D. (2020). "Improving the oxidative stability and lengthening the shelf life of DHA algae oil with composite antioxidants". *Food Chemistry*. 313:126139.
- Rakariyatham K.**, Zhou D., Rakariyatham N., and Shahidi F. (2020). REVIEW ARTICLE "Sapindaceae (*Dimocarpus longan* and *Nephelium lappaceum*) seeds and peel by-products: Potential sources for phenolic compounds and use as functional ingredients in food and health applications" *Journal of Functional Foods*. 68: 103846.
- Liu Y., Wu Z., Zhang J., Liu Y., Liu Z., Xie H., **Rakariyatham K.**, and Zhou D. (2020). "Seasonal Variation of Lipid Profile of Oyster *Crassostrea talienwhanensis* from the Yellow Sea Area". *Journal of Aquatic Food Product Technology*. 29(4):360-372.
- DiMarco-Crook C., **Rakariyatham K.**, Li Z., Du Z., Zheng J., and Xiao H. (2020) "Synergistic anti-cancer effects of curcumin and 3',4'-didemethylnobiletin in combination on colon cancer cells". *Journal of Food Science*. 85(4):1290-1301.

- Li D., Zhou D., Yin F., Dong X., Xie H., Liu Z., Li A., Li J., **Rakariyatham K.**, and Shahidi F. (2020). "Impact of different drying processes on the lipid deterioration and color characteristics of *Penaeus vannamei*". *Journal of the Science of Food and Agriculture*. 100(6):2544-2553.
- Rakariyatham K.**, Du Z., Yuan B., Gao Z., Song M., Pan C., Han Y., Wu X., Tang Z., Zhang G. and Xiao H. (2019). "Inhibitory effects of 7,7'-bromo-curcumin on 12-O-tetradecanoylphorbol-13-acetate-induced skin inflammation". *European Journal of Pharmacology*. 858:172479.
- Rakariyatham K.**, Yang X., Gao Z., Song M., Han Y., Chen X., and Xiao H. (2019). "Synergistic chemopreventive effect of allyl isothiocyanate and sulforaphane on non-small cell lung carcinoma cells". *Food and Function*. 10(2):893-902.
- Liu Z., Zhou D., **Rakariyatham K.**, Xie H., Li D., Zhu B., and Shahidi F. (2019). "Impact of frying on changes in clam (*Ruditapes philippinarum*) lipids and frying oils: Compositional changes and oxidative deterioration". *Journal of the American Oil Chemists' Society*. 96(12):1367-1377.
- Han Y., Huang M., Li L., Cai X., Gao Z., Li F., **Rakariyatham K.**, Song M., Fernández-Tomé S., and Xiao H. (2019). "Non-extractable polyphenols from cranberry: A potential anti-inflammation and anti-colon cancer agent". *Food and Function*. 10:7714-7723.
- Zhao Q., Li J., Xu J., Lv D., **Rakariyatham K.**, and Zhou D. (2019). "Rapid extraction of free fatty acids from edible oil after accelerated storage based on amino-modified magnetic silica nanospheres". *Analytical Methods*. 11(35):4520-4527.
- Gang K., Wu X., Zhou D., Zhao Q., Zhou X., Lv D., **Rakariyatham K.**, Liu X., and Shahidi F. (2019). "Effects of hot air drying process on lipid quality of whelks *Neptunea arthritica cumingi* Crosse and *Neverita didyma*". *Journal of Food Science and Technology -Mysore-*. 56:4166-4176.
- Rakariyatham K.**, Liu X., Liu Z., Wu S., Zhou D., and Zhu B. (2019). "Improvement of phenolic contents and antioxidant activities of longan (*Dimocarpus longan*) peel extracts by enzymatic treatments". *Waste and Biomass Valorization*. 11(8):3987-4002.
- Wu Z., Hu X., Zhou D., Tan Z., Liu Y., Xie H., **Rakariyatham K.**, and Shahidi F. (2019). "Seasonal variation of proximate composition and lipid nutritional value of two species of scallops (*Chlamys farreri* and *Patinopecten yessoensis*)". *European Journal of Lipid Science and Technology*. 121(7):1088493.
- Liu Y., Yin F., Liu Y., Wu Z., Zhang J., Zhao Q., **Rakariyatham K.**, and Zhou D. (2019). "Characterization of glycerophospholipid molecular species in two species of Arcidae (*Scapharca subcrenata* and *Scapharca broughtonii*)". *Journal of Aquatic Food Product Technology*. 28(4):342-351.
- Xie H., Zhou D., Yin F., **Rakariyatham K.**, Zhao M., Liu Z., Li D., Zhao Q., Liu Y., Shahidi F., and Zhu B. (2019) "Mechanism of antioxidant action of natural phenolics on scallop (*Argopecten irradians*) adductor muscle during drying process". *Food Chemistry*, 281, 251-260.
- Rakariyatham K.**, Wu X., Tang Z., Han Y., Wang Q., and Xiao H. (2018). "Synergism between luteolin and sulforaphane in anti-inflammation". *Food and Function*. 9(10), 5115-5123.
- Zhou D., and **Rakariyatham K.** "Phospholipids". (2018). In book *Reference Module in Food Science, Encyclopedia of Food Chemistry*. Book Chapter
- Ding Y., Gao Z., Chen B., **Rakariyatham K.**, Suo H., Tong H., and Xiao H. (2018). "The effect of different treatments of (-)-epigallocatechin-3-gallate on colorectal carcinoma cell lines". *Nutrition and Cancer*. 70(7), 1126-1136.

- Yin F., Hu X., Zhou D., Ma X., Tian X., Huo X., **Rakariyatham K.**, Shahidi F, and Zhu B. (2018). "Hydrolysis and transport characteristics of tyrosol acyl esters in rat intestine". *Journal of Agriculture and Food Chemistry*. 66(47), 12521-12526.
- Yin F., Hu X., Zhou D., Ma X., Tian X., Huo X., **Rakariyatham K.**, Shahidi F, and Zhu B. (2018). "Evaluation of the stability of tyrosol esters during *in vitro* gastrointestinal digestion". *Food and Function*. 9(7), 3610-3616.
- Hu Q., Yuan B., Xiao H., Zhao L., Wu X., **Rakariyatham K.**, Zhong L., Han Y., Kimatu B.M., and Yang W. (2018). "Polyphenols-rich extract from *Pleurotus eryngii* with growth inhibitory of HCT116 colon cancer cells and anti-inflammatory function in RAW264.7 cells" *Food and Function*. 9(3), 1601-1611.
- Vergne M., Patras A., Bhullar M. S., Shade L. M., Sasges M., **Rakariyatham K.**, Pan C., and Xiao H. (2018). "UV-C irradiation on the quality of green tea: effect on catechins, antioxidant activity, and cytotoxicity". *Journal of Food Science*. 83(5), 1258-1264.
- Bhullara M.S., Patras A., Kilanzo-Nthenge A., Pokharel B., Yannum S.K., **Rakariyatham K.**, Che P., Xiao H., and Sasges M. (2018). "Microbial inactivation and cytotoxicity evaluation of UV irradiated coconut water in a novel continuous flow spiral reactor". *Food Research International*. 103, 59-67.
- Rafiq S, Huma N., **Rakariyatham K.**, Hussain I., Gulzar N., And Hayat I. (2018). "Anti-inflammatory and anticancer activities of water-soluble peptide extracts of buffalo and cow milk Cheddar cheeses". *International Journal of Dairy Technology*. 71, 432-438.
- Yuan B., Zhao L., **Rakariyatham K.**, Han Y., Gao Z., Muinde B., Hu Q., and Xiao H. (2017). "Isolation of a novel bioactive protein from an edible mushroom *Pleurotus eryngii* and its anti-inflammatory potential". *Food and Function*. 8(6), 2175-2183.
- Wu X., Song M., Qiu P., **Rakariyatham K.**, Li F., Gao Z., Cai X., Wang M., Xu F., Zheng J., and Xiao H. (2017). "Synergistic chemopreventive effects of nobiletin and atorvastatin on colon carcinogenesis". *Carcinogenesis*. 38(4), 455-464.
- Islam M. S., Patras A., Pokharel B., Vergne M. J., Sasges M., Begum A., **Rakariyatham K.**, Pan C., and Xiao H. (2016). "Effect of UV irradiation on nutritional quality and cytotoxicity of apple juice". *Journal of Agriculture and Food Chemistry*. 64(41), 7812-7822.
- Liu X., Luo Q., **Rakariyatham K.**, Cao Y., Goulette T., Liu X., and Hang Xiao. (2016). "Antioxidation and anti-ageing activities of different stereoisomeric astaxanthin *in vitro* and *in vivo*". *Journal of Functional Foods*. 25, 50-61.
- Funaro A., Wu X., Song M., Zheng J., Guo S., **Rakariyatham K.**, Estrada M. T. R, and Xiao H. (2016). "Enhanced anti-inflammatory activities by the combination of luteolin and tangeretin". *Journal of Food Science*. 81(5), H1320–H1327.
- Wu X., Song M., **Rakariyatham K.**, Zheng J., Guo S., Tang Z., Zhou S., and Xiao H. (2015). "Anti-inflammatory effects of 4'-demethylnobiletin, a major metabolite of nobiletin". *Journal of Functional Foods*. 19, 278–287.
- Wu X., Song M., **Rakariyatham K.**, Zheng J., Wang M., Xu F., Gao Z., and Xiao H. (2015). "Inhibitory effects of 4'-demethylnobiletin, a metabolite of nobiletin, on 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced inflammation in mouse ears". *Journal of Agricultural and Food Chemistry*. 63 (51), 10921–10927.

Rangel N. A., Lin L., **Rakariyatham K.**, Bach A., Trinh K., Clement M. H. S. and Srinivasan C. (2012). "Unincorporated iron pool is linked to oxidative stress and iron levels in *Caenorhabditis elegans*". *Biometals*. 19, 971-985.

Abstract/Proceedings in Conference

Rakariyatham K., and Xiao H. "Anti-inflammatory and antioxidant properties of allyl Isothiocyanate and sulforaphane in combination and their synergism in RAW 264.7 macrophages". *Food and Function International Symposium 26-27 May 2018, Xi'an, China*.

Rakariyatham K., Gao Z., and Xiao H. "Synergistic inhibitory effect of allyl isothiocyanate and sulforaphane on human non-small cell lung carcinoma cells". The 253th American Chemical Society Conference, Agricultural and Food Chemistry Division, International Student Symposium, San Francisco, USA, April 2017.

Rakariyatham K., Wu X., and Xiao H. "Synergism between Sulforaphane and Luteolin in Anti-inflammation". The 252th American Chemical Society Conference, International Student Symposium, Philadelphia, USA, August 2016.

Rakariyatham K., and Xiao H. "Anti-inflammatory Effect of Allyl Isothiocyanate and Curcumin in Combination". Experimental Biology, American Society of Nutrition Annual Meeting, Boston, Massachusetts, USA, March 2015.

Rakariyatham K., "Defining the *in vivo* Effects of Divalent Manganese in *Caenorhabditis elegans*" Department of Chemistry and Biochemistry, College of Natural Sciences and Mathematics, California State University Fullerton, USA, August 1, 2011.

Rakariyatham K., Bach C., and Srinivasan C. "DAF-16 is necessary for divalent manganese to exert its antioxidant-like properties in *Caenorhabditis elegans*". The 23rd Annual CSU Biotechnology Symposium, Orange County, California, USA, January 2011.

Rakariyatham K., Villarreal Ponce A. P., Trinh K., Bach C. and Srinivasan C. "*Caenorhabditis elegans* grown on Mn(II) enriched diet have reduced levels of Reactive Oxygen Species (ROS) *in vivo*". The Experimental Biology, American Society for Biochemistry and Molecular Biology (ASBMB) Annual Meeting, Anaheim, California, USA, April 2010

Rakariyatham K., Villarreal Ponce A. P., Trinh K., Bach C. and Srinivasan C. "Defining the *in vivo* Effects of Divalent Manganese in *Caenorhabditis elegans*". The 22nd Annual CSU Biotechnology Symposium, Santa Clara, California, USA, January 2010

Rakariyatham K., Bach C., and Srinivasan C. "Is Ionic Manganese a Free Radical Scavenger *in vivo*?" The 16th Annual Meeting of Free Radical Biology and Medicine (SFRBM) Society, San Francisco, California, USA, November 2009

Rakariyatham K., Rakariyatham N., Kijjanapanich P., and Deming R. L. "Physical and chemical properties of Thai Panga fish *Pangasius bocourti* bone as calcium source for mineral supplements" The 236th National Meeting & Exposition of American Chemical Society (ACS), Philadelphia, Pennsylvania, USA, August 2008

Public Presentation

Rakariyatham K., Lu T., Xie H., Yu Z., Li D., Liu Z., Shen Y., Zhou D., and Zhu B. "Effects of Longan (*Dimocarpus longan*) Peel Extracts and Food Additives on Oxidative Stability of Tuna Oil". Seminar on the Research Food Science and Technology in China and Thailand. The College of Food Science and Nutrition Engineering of China Agricultural University, November 2021.

Rakariyatham K., Liu X., Liu Z., Wu S., Zhou D., and Zhu B. "*Dimocarpus longan* by-products: Potential sources for phenolic compounds and use as functional ingredients in food and health applications". Seminar on the Research Food Science and Technology in China and Thailand. The College of Food Science and Nutrition Engineering of China Agricultural University, August 2020.

Rakariyatham K., Liu X., Liu Z., Wu S., Shahidi F., Zhou D., and Zhu B. "Improvement of Phenolic Contents and Antioxidant Activities of Longan (*Dimocarpus longan*) Peel Extracts by Enzymatic Treatment". The 2019 International Food Non-Thermal Processing Technology Seminar, Dalian, China, September 2019.

Wu X.*, **Rakariyatham K.***, Zhang G., and Xiao H. "Inhibitory effect of 4'-demethylnobiletin, a major metabolite of nobiletin, and 7,7'-bromo-curcumin, a bioactive analog of curcumin on 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced skin inflammation". The 256th American Chemical Society Conference, Agricultural and Food Chemistry Division, Boston, Massachusetts, USA, August 2018.

Rakariyatham K., Gao Z., and Xiao H. "Synergistic inhibitory effect of allyl isothiocyanate and sulforaphane on human non-small cell lung carcinoma cells". The 253th American Chemical Society Conference, Agricultural and Food Chemistry Division, International Student Symposium, San Francisco, USA, April 2017.

Rakariyatham K., Wu X., and Xiao H. "Synergism between Sulforaphane and Luteolin in Anti-inflammation". The 252th American Chemical Society Conference, International Student Symposium, Philadelphia, USA, August 2016.

Rakariyatham K., and Xiao H. "Anti-inflammatory Effect of Allyl Isothiocyanate and Curcumin in Combination". Experimental Biology, American Society of Nutrition Annual Meeting, Boston, Massachusetts, USA, March 2015.

Rakariyatham K., "Curcumin and Colon Cancer Prevention". Nation University Conference, Thailand, December, 2014 (*invited speaker*)

Rakariyatham K., "Defining the *in vivo* Effects of Divalent Manganese in *Caenorhabditis elegans*". Department of Chemistry and Biochemistry, College of Natural Sciences and Mathematics, California State University Fullerton, USA, August 1, 2011.

Rakariyatham K., "Alcohol Production from Genetically Engineered *E. Coli*". Department of Mechanical Engineering, Faculty of Engineering, Chiang Mai University, Thailand, July 28, 2010. (*invited speaker*)

Rakariyatham K., "Method Development to Quantify Reactive Oxygen Species in *C. elegans*". Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand, June 11, 2009. (*invited speaker*)