FACULTY OF BIOSCIENCE ENGINEERING

The Chancellor of Ghent University has the honor of inviting you to attend the public defense of the doctoral dissertation of

Msc. Nguyen Nhat Minh Phuong

Title of the doctoral dissertation:

Opportunities and challenges to valorize tropical fruit by-products as bioactive compounds: a case study on rambutan (*Nephelium lappaceum* L.) peel

The public defense will take place on **22/04/2020 at 4 pm** in room A 0.1 Azalea at Campus Coupure, Coupure Links 653, 9000 Ghent. However, due to the strict government measures related to **COVID-19**, the public defense will be organized in such a way that you can follow the live defense from home. We strongly advise you to stay home and make use of the following link: PhD Minh presentation*

Please dial in 5 minutes before the defense by downloading the Starleaf app or calling in via the web browser. Please mute your video and audio to not disturb the jury members and the candidate during the defense. We also kindly request you to make a photograph of you and the live-stream during the presentation and send it to: phuong.nguyennhatminh@ugent.be. This will be very much appreciated:

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Abstract of the doctoral research

This PhD research focused on the valorization of tropical fruit by-products. The development of processing industries have led to the generation of huge amounts of by-products (i.e. seeds, peel, and pomace) which leads to serious economic and environmental problems. These by-products are nearly considered as potential sources of phenolic compounds. Therefore, this research screened total phenolic content (TPC) and total antioxidant activities as well as identified the phenolic profiles of some tropical fruits by-products. The results showed that rambutan peel had the highest TPC and antioxidant values among the screened by-products, with several important phenolic compounds. Thus, rambutan peel was selected as a typical material for the evaluation on the *in vitro* and *in situ* antioxidant, antimicrobial, and enzyme inhibitory properties.
Rambutan peel extract (RPE) enabled the retardation of lipid oxidation of soybean oil during storage and during deep frying. Also, RPE inhibited/retarded the growth of several microorganisms; especially, *Vibrio* and *Salmonella* strains when inoculated on raw chicken breast and fish fillet. Besides, RPE strongly inhibited the activity of α-amylase, α-glucosidase, trypsin, and angiotensin converting enzyme in a dose-dependent manner. Stabilization of phenolic compounds in RPE with encapsulation techniques was applied using proteins as coating matrices and foam mat drying. These findings might open a new door for utilizing tropical fruit by-products as a potential source to extract valuable compounds which can be used in pharmacy and/or supplemented in food products as natural preservatives.

Brief Curriculum Vitae

Nguyen Nhat Minh Phuong was born on September, 22nd 1979 in Hau Giang City, Vietnam. She graduated as a Bachelor of Food Technology in 2002 from Can Tho University, Vietnam with the thesis titled “Investigation of storage conditions for dragon fruits”. From 2002 - 2006, she worked as a researcher in Can Tho University. From 2006 - 2008, she obtained a VLIR-UOS scholarship for Master of Science in Food Technology at KU Leuven and Ghent University, Belgium. In her master thesis, she studied the topic “Isolation and characterization of endogenous xylanase during wheat germination”. After that, she came back to Can Tho University as a lecturer. From 10/2015, she obtained a PhD scholarship from the Ministry of Education and Training, Vietnam (911 program) for four years. She started her research in the Research Unit VEG-i-TEC, Department of Food Technology, Safety and Health, Faculty of Bioscience Engineering, Ghent University. She successfully guided 4 bachelor/master students during their thesis. So far, she is first author of three papers published in peer-reviewed international journals and two book chapters.

*Link to PhD presentation: https://meet.starleaf.com/7043196/app