

THESIS INFORMATION

Title: **HYDROLYZED COCONUT OIL BY ENZYME LIPASE TO OBTAIN FREE FATTY ACIDS WHICH HAVE BIO-ACTIVE ACTIVITY**

Major: **FOOD TECHNOLOGY**

Major code: **62.54.01.01**

PhD Candidate: **NGUYEN THI AI VAN**

Advisors: **Associate Prof. Dr. PHAN NGOC HOA**
Dr. TRAN BICH LAM

University: **Ho Chi Minh City University of Technology.**

The objective of the thesis is to investigate and evaluate the process of hydrolysis virgin coconut oil (VCO) catalyzed by four type of lipase enzymes, thereby selecting the appropriate lipase enzyme to obtain hydrolysis products that have resistant bacteria which cause foodborne illness and have ability to improve cholesterol levels in the blood of Wistar mice.

New contributions of this thesis

- Hydrolyzed VCO by four type lipase enzymes such as, Lypozyme TL 100L, Lypozyme TL IM, CRL and PPL are affected by four factors affecting the hydrolysis process: oil/buffer ratio, enzyme/ substrate, pH and temperature are determined. As the result, the CRL enzyme catalyzed the VCO hydrolysis was found to be the most suitable for obtaining the desired free fatty acid product.
- The resistant ability of four types of bacteria such as: *Staphylococcus aureus* (ATCC 25923), *Bacillus subtilis* (ATCC 11774), *Escherichia coli* (ATCC 25922) and *Salmonella enteritidis* (ATCC 13076) of three free

fatty acid fractions: FFA1, FFA2 and FFA3 are shown as follows. Antibacterial activity of FFA1 is higher than FFA2. FFA3 does not show its resistance to all four types of these bacteria.

- The effect of FFA1, FFA2 and FFA3 fraction on metabolism in Wistar mice with high fed diet (HFD) as follow, FFA1 and FFA2 both reduced blood cholesterol levels and reduced the weight of mice with HFD. Particularly for FFA3 (the fraction contains mainly long-chain free fatty acids, C14 - C18), not only does not improve the weight of mice with HFD but also causes hepatitis.

Advisors

PhD candidate

Assoc. Prof. Dr. Phan Ngoc Hoa

Dr. Tran Bich Lam

Nguyen Thi Ai Van