

# DISSERTATION INFORMATION

Title: **Study on FOS synthesis from sucrose and FOS purification by nanofiltration**

Major: Food and Beverage Technology

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PhD candidate: Le Thi Hong Anh

Advisors: Asst. Prof. Dr. Dong Thi Anh Dao

Dr. Nguyen Huu Phuc

Training University: Ho Chi Minh City University of Technology

## ABSTRACT OF THESIS

Nowadays, producing prebiotic and supplement prebiotic in food products is considered a worldwide prominent trend in food technology. One of the most important prebiotics that has gotten interest is Fructooligosaccharides (FOS). Hence, the study of producing high purity for FOS that can meet the food processing standards from domestic materials must obviously be put into consideration.

In order to solve the above issue, this dissertation aims to study the influencing factors, the kinetics of FOS synthesis from sucrose using Fructosyltransferase enzyme (FTS), and the improvement of purity for FOS by nanofiltration. The major results are found as follows:

### ***1) Theoretical results***

- A kinetics model of FOS synthesis from sucrose using FTS enzyme was performed.
- Rules of main factors influencing of some technological parameters on the separation of monosaccharides, saccharose and FOS by nanofiltration were determined and the technique of diafiltration to enhance the purity of FOS was also proposed.

### ***2) Experimental results***

- The kinetic parameters of FTS enzyme by genetic algorithm method were

determined. The result helped reduce the quantity of experiments, time and cost related to study of kinetics of FTS enzyme, especially in case of multiple substrates.

- The regression equation which stimulates the effects of temperature, pH, initial sucrose concentration and rate of enzyme on the performance of transforming saccharose into FOS was established, from which the optimum conditions of FOS synthesis was proposed.
- Main parameters of nanofiltration process were optimized by restricted area method. Moreover, the optimum diafiltration mechanism was also set to increase the purity of FOS to 86.7%.

These results have established beginning steps for the application of new technology into practice. In addition, results found in this dissertation would be useful reference for coming research in the same field.

#### **Advisors**

#### **PhD Candidate**

*Asst. Prof. Dr. Dong Thi Anh Dao*

*Dr. Nguyen Huu Phuc*

*Le Thi Hong Anh*