

**Title :** Development of Green Apple Fragrance Microcapsules for Drinking Powder Using Coacervation Technology

**Author(s) :** 1. Phasit Pattanothai

**Student ID :** 640510054

**Major :** Biochemistry and Biochemical Innovation

**Advisor(s) :** 1. Assistant Professor Dr. Kanchana Dumri

**Type of presentation\* (choose 1) :**

<input type="checkbox"/>	<b>Oral Presentation</b>	(เฉพาะ ตัวแทนศ.ที่สาขาเลือกให้นำเสนอแบบบรรยาย)
<input checked="" type="checkbox"/>	<b>Poster</b>	(กรณี นำเสนอผลงานปัญหาพิเศษ/การค้นคว้าอิสระ)
<input type="checkbox"/>	<b>Cooperative Education</b>	(กรณี นำเสนอผลงานสหกิจศึกษา)

## ABSTRACT

This study investigates the optimal conditions for encapsulating green apple flavor compounds using the coacervation method. Gum arabic and gelatin were employed as coating materials, with glycerol acting as the cross-linking agent. A preliminary analysis of green apple samples was conducted using gas chromatography-mass spectrometry (GC-MS) to identify the primary flavor compounds. Ethyl valerate was identified as the key compound, with a total ion chromatogram (TIC) peak observed at a retention time of 4.65 minutes. The study evaluated various emulsification rates and coating material concentrations to determine the optimal encapsulation conditions, assessed based on encapsulation efficiency (entrapment efficiency). Emulsification speeds of 18,000 and 24,000 rpm, along with a coating material concentration of 5.0% w/v, were investigated. The resulting microcapsules exhibited a spherical morphology with a single-layer coating. At a coating material concentration of 5.0% w/v, the microcapsule thickness and diameter were measured as  $48.89 \pm 8.18 \mu\text{m}$  and  $44.59 \pm 8.22 \mu\text{m}$  for emulsification speeds of 18,000 and 24,000 rpm, respectively. The results suggest that a higher coating material concentration leads to increased microcapsule thickness, while higher emulsification speeds reduce capsule size with minimal effect on thickness. In future experiments, the entrapment efficiency (%) will be assessed to evaluate the release profile of flavor compounds from the microcapsules over a two-week period. Additionally, the preservation efficiency of the 5.0% w/v coating material will be examined by measuring the relative surface oil content.

\*Type of presentation must be matched with an option you choosing on student upload system.

\*\*The abstract can be more than one page and must be approved by project advisor before upload.

### Title name guide.

ADVISOR title name / แพลไทย	
Professor Dr.	ศาสตราจารย์ ดร.
Professor	ศาสตราจารย์
Associate Professor Dr.	รองศาสตราจารย์ ดร.
Associate Professor	รองศาสตราจารย์
Assistant Professor Dr.	ผู้ช่วยศาสตราจารย์ ดร.
Assistant Professor	ผู้ช่วยศาสตราจารย์
Dr.	ดร.
Lecturer	อาจารย์
Mrs.	นาง
Ms.	นางสาว
Mr.	นาย

### Major name guide.

SCIENCE MAJOR name / แพล	
Biology	ชีววิทยา
Microbiology	จุลชีววิทยา
Zoology	สัตววิทยา
Biochemistry and Biochemical Technology or Biochemistry and Biochemical Innovation	ชีวเคมีและชีวเคมีเทคโนโลยี หรือ ชีวเคมีและชีวเคมีนวัตกรรม
Chemistry	เคมี
Industrial Chemistry	เคมีอุตสาหกรรม
Materials Science	วัสดุศาสตร์
Physics	ฟิสิกส์
Computer Science	วิทยาการคอมพิวเตอร์
Data Science	วิทยาการข้อมูล
Mathematics	คณิตศาสตร์
Statistics	สถิติ
Gemology	อัญมณีวิทยา
Geology	ธรณีวิทยา
Environmental Science	วิทยาศาสตร์สิ่งแวดล้อม

*\*Type of presentation must be matched with an option you choosing on student upload system.*

*\*\*The abstract can be more than one page and must be approved by project advisor before upload.*

*\*Type of presentation must be matched with an option you choosing on student upload system.*  
*\*\*The abstract can be more than one page and must be approved by project advisor before upload.*