

**Title :** Screening of Lactic Acid Bacteria from Fermented Foods with Digestive Enzyme Production and Antibacterial Property for Further Application as Precision Probiotics

**Author(s) :** 1. Chanika Nipanon

**Student ID :** 630510176

**Major :** Microbiology

**Advisor(s) :** 1. Assistant Professor Dr. Jomkhwan Meerak

**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

Lactic acid bacteria are an important source of metabolites and play a vital role in human health by modulating gut microbiota, enhancing immune response and controlling metabolic diseases in human. They are widely utilized in probiotic application and are essential for the development of precision probiotics targeting specific diseases. This study aimed to isolate and preliminarily screen LAB strains based on their enzyme production and antibacterial property against the representative pathogenic bacteria. A total of forty-nine isolates were obtained from fermented foods. Among these, forty-eight isolates exhibited protease production, which isolate DS5, a gram-positive rod-shaped bacterium derived from fermented pork, showed the highest protease production by forming a halo zone of  $6.17 \pm 0.60$  mm on solid media. Furthermore, 7 isolates from fermented pork, fermented fish and fermented vegetables showed cellulase production, while 2 isolates from fermented vegetable, exhibited pectinase production. The antibacterial activity of top 10 isolates which produced three target enzymes was evaluated against *Bacillus cereus*, *Staphylococcus aureus*, *Escherichia coli*, *Listeria monocytogenes* and *Pseudomonas aeruginosa* using the agar well diffusion method. Six isolates demonstrated inhibitory effects against *B. cereus*, *E. coli* and *P. aeruginosa*. Among these, isolate MV2-2, which was obtained from fermented pork, revealed the strongest antibacterial activity to those pathogenic bacteria with inhibition zones of  $11.33 \pm 0.58$  mm,  $11.67 \pm 0.58$  mm and  $11.67 \pm 0.58$  mm, respectively. These findings indicated that LAB isolated from fermented foods revealed the potency in probiotic characterization. The isolates will be examined and characterized particularly in the development of precision probiotics targeting metabolic syndrome and specific immune responses in human.

\*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.