Title : Characterisation and Optimisation of Carotenoid Production from a Marine Bacterial Isolate

Author(s) : **1.** Miss Arraya Rukhit **Student ID :** 650510312

Major : Microbiology

Advisor(s) : **1.** Associate Professor Dr. Thararat Chitov

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

- ☐ **Oral Presentation** (เฉพาะ ตัวแทนนศ.ที่สาขาเลือกให้นำเสนอแบบบรรยาย)
- ☑ **Poster** (กรณี นำเสนอผลงานปัญหาพิเศษ/การค้นคว้าอิสระ)
- ☐ **Cooperative Education** (กรณี นำเสนอผลงานสหกิจศึกษา)

ABSTRACT

Many bacterial species from marine environments produce secondary metabolites and pigments of high economic value. This study aimed to characterise a marine bacterial isolate and determine optimum conditions for its growth and carotenoid production. A pigment-producing bacterial isolate, W11, was identified from seawater using 16S rRNA gene sequencing. Growth and pigment production were assessed under different pH levels (pH 6–12), incubation temperatures (30, 37, and 40°C), and agitation conditions (150 rpm and static culture). Pigments were extracted using various solvents and sonication methods and analysed using high-performance liquid chromatography (HPLC). Isolate W11 was identified as *Bacillus infantis*, and its optimal carotenoid production was achieved with culture grown in Trypticase Soy Yeast Extract Broth at pH 8 and 37°C with agitation at 150 rpm. The most effective carotenoid extraction was achieved using sonication in combination with 99.9% methanol. The total carotenoid obtained under these conditions was 2.13 mg/L. HPLC analysis confirmed the presence of carotenoid compounds. Although the identity of the compounds remains inconclusive, isolate W11 possesses many biotechnologically useful properties, especially the ability to produce carotenoid pigments under alkaline conditions and at elevated temperatures. Further characterisation via LC-MS is required to identify specific carotenoid profiles and their antioxidant potential.

Keywords: Carotenoid biosynthesis, Pigment-producing bacteria, Microbial resource, Secondary metabolites

**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.*