Title : Evaluation of Cytotoxicity of Synthetic Heterocyclic Compounds Against Lung Cancer Cell Line

Author(s) : **1.** Woranittha Laiad **Student ID :** 650510100

Major : Biochemistry and Biochemical Innovation

Advisor(s) : **1.** Associate Professor Dr. Panchika Prangkio

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

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

ABSTRACT

Lung cancer is the most diagnosed cancer and the leading cause of death worldwide. Despite advances, current therapies are limited by resistance, toxicity, and poor selectivity. Therefore, the development of synthetic compounds with high efficacy and cancer cell specificity is essential. Benzopyrano[4,3-c]pyrazolines and their derivatives have been reported to exhibit anti-lung-cancer activity. This study investigated the anticancer activity of four synthetic heterocyclic compounds (TLWP01, TLWP07, TLWP08, and TLWP09) against lung cancer cells using the MTT assay. These compounds differ in methoxy substitution positions on the benzopyran ring. TLWP01 is the parent compound lacking substituents, whereas TLWP07, TLWP08, and TLWP09 are methoxy-substituted derivatives containing a methoxy ($-OCH_3$) group that may affect interactions with biological targets. Half-maximal inhibitory concentration (IC_{50}) values were determined. Gefitinib was used as a reference drug and showed a mean IC_{50} value of 6.661 ± 1.477 μM. In A549 lung cancer cells, TLWP08 exhibited the highest cytotoxic activity (IC_{50} = 8.273 ± 0.784 μM), followed by TLWP01 (8.784 ± 2.558 μM) and TLWP07 (11.792 ± 2.458 μM), while TLWP09 showed no inhibitory effect within the tested concentration range. Selectivity was assessed in normal HEK293T cells, where IC_{50} values were not determined. Overall, %cell viability decreased with increasing compound concentration but remained higher than the control due to cell detachment. Notably, TLWP08 showed higher cytotoxicity in A549 cells than in HEK293T cells, indicating favorable selectivity. Benzopyrano[4,3-c]pyrazolines derivatives, particularly TLWP08, therefore demonstrate potential as lead compounds for anti-lung-cancer drug development. Further studies are required to confirm their mechanisms and safety.

**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 / แปลไทย	
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 / แปล	
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.*