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CYTOTOXIC CONSTITUENTS FROM *DENDROBIUM BRYMERIANUM*

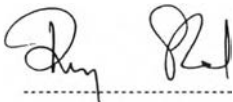
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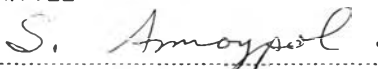
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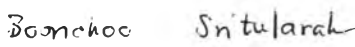
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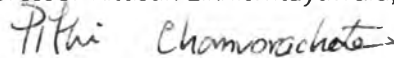
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พรพรม คล่องคำนวณการ : องค์ประกอบที่เป็นพิษต่อเซลล์จากเอื้องคำฝอย.
(CYTOTOXIC CONSTITUENTS FROM *DENDROBIUM BRYMERIANUM*) อ.ที่
ปริญญาวิทยานิพนธ์หลัก: รศ. ภก. ดร.บุญชู ศรีตุลาภิรักษ์, อ.ที่ปริญญาวิทยานิพนธ์ร่วม:
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การศึกษาทางพฤกษเคมีของสารสกัดหยาบจากเมทานอลของเอื้องคำฝอย สามารถแยก
สารได้ทั้งสิ้น 8 ชนิด โดยสารที่แยกได้สามารถแบ่งออกได้เป็น 3 กลุ่ม คือ กลุ่ม bibenzyl
(moscatilin gigantol และ tristin) กลุ่ม phenanthrene (flavanthrinin และ lusianthridin)
และกลุ่ม fluorenone (nobilone dendroflorin และ denchrysan B) การพิสูจน์โครงสร้าง
ทางเคมีของสารที่แยกได้ อาศัยการวิเคราะห์สเปกตรัมของ MS IR UV และ NMR ร่วมกับการ
เปรียบเทียบกับข้อมูลที่เคยมีรายงานมาก่อน และทดสอบฤทธิ์เป็นพิษต่อเซลล์ 2 ชนิด ได้แก่
เซลล์มะเร็งในช่องปากและเซลล์มะเร็งปอด พบว่า สารที่มีฤทธิ์เป็นพิษต่อเซลล์มะเร็งในช่องปาก
ได้แก่ moscatilin flavanthrinin lusianthridin denchrysan B และ tristin โดยพบว่า
moscatilin มีฤทธิ์ยับยั้งเซลล์มะเร็งชนิดนี้ได้แรงที่สุด โดยมีค่าความเข้มข้นที่สามารถทำให้เกิด
การตายของเซลล์ได้ 50% (IC_{50}) คือ 2.62 μM ขณะที่ flavanthrinin และ lusianthridin มีฤทธิ์
ปานกลาง โดยมีค่า IC_{50} 79.67 และ 44.13 μM ตามลำดับ ส่วน denchrysan B และ tristin มี
ฤทธิ์ค่อนข้างอ่อน มีค่า IC_{50} 158.91 และ 163.83 μM ตามลำดับ โดยใช้ ellipticine (IC_{50} 5.00
 μM) และ doxorubicin (IC_{50} 1.44 μM) เป็นชุดควบคุมผลบวก นอกจากนี้ เมื่อนำสารทั้ง 8
ชนิดมาทดสอบฤทธิ์เป็นพิษต่อเซลล์มะเร็งปอด พบว่า moscatilin gigantol lusianthridin
และ dendroflorin สามารถยับยั้งการเจริญเติบโตของเซลล์มะเร็งปอดได้ดี โดยมีค่า IC_{50} เท่ากับ
674.04 85.40 268.60 และ 487.60 μM ตามลำดับ เมื่อนำสารทั้งสี่ชนิดมาทดสอบฤทธิ์ anti-
migration ของเซลล์มะเร็งปอด พบว่า moscatilin และ dendroflorin แสดงฤทธิ์ anti-
migration ได้ดีที่สุดในรองลงมาคือ lusianthridin และ gigantol ตามลำดับ

ภาควิชา เภสัชเวทและเภสัชพฤกษศาสตร์

สาขาวิชา เภสัชเวท

ปีการศึกษา 2556

ลายมือชื่อนิสิต พร พรพรม คล่องคำนวณการ

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KEYWORDS: DENDROBIUM BRYMERIANUM / CYTOTOXIC ACTIVITY / BIBENZYL / PHENANTHRENES

PORNPROM KLONKUMNUANKARN: CYTOTOXIC CONSTITUENTS FROM *DENDROBIUM BRYMERIANUM*. ADVISOR: ASSOC. PROF. BOONCHOO SRITULARAK, Ph.D., CO-ADVISOR: PROF. KITTISAK LIKHITWITAYAWUID, Ph.D., 189 pp.

Phytochemical study of the methanol extract from *Dendrobium brymerianum* (Orchidaceae) led to the isolation of eight compounds, which could be classified into 3 groups, consist of bibenzyls (moscatilin, gigantol and tristin), phenanthrenes (flavathrinin and lusianthridin) and fluorenones (nobilone, dendroflorin and denchrysan B). Their structure determinations were carried out by analysis of their spectroscopic data (UV, IR, MS ^1H NMR and ^{13}C NMR) and comparison with previously reported data. These obtained compounds were evaluated for cytotoxic activity against KB (oral cavity cancer) and H460 (lung cancer) cell lines. The results suggested that, for the KB cells, moscatilin exhibited the strongest cytotoxic effect with an IC_{50} value of 2.62 μM , whereas flavanthrinin, lusianthridin showed moderate activity (IC_{50} 79.67 and 44.13 μM , respectively), and denchrysan B and tristin showed weak activity (IC_{50} 158.91 and 163.83 μM , respectively). Ellipticine (IC_{50} 5.00 μM) and Doxorubicin (IC_{50} 1.44 μM) were used as a positive control. Moreover, for H460 cells, moscatilin, gigantol, lusianthridin and dendroflorin exhibited potential cytotoxic effect with IC_{50} values of 674.04, 85.40, 268.60 and 487.60 μM , respectively. These compounds were further investigated for their anti-migration activity. The results indicated that at 48 hr moscatilin showed the strongest anti-migration effect, followed by dendroflorin, lusianthridin and gigantol.

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