

**Siti Mariyatul Ulfah, 2015, ISOLASI DAN IDENTIFIKASI SENYAWA KUMARIN TER-*O*-GERANILASI DARI AKAR *Limonia acidissima* L. SERTA UJI AKTIVITAS TERHADAP SEL KANKER LEHER RAHIM. Skripsi ini dibawah bimbingan Dr. Mulyadi Tanjung, M.S dan Tjitjik Srie Tjahjandarie, Ph.D, Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga.**

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## ABSTRAK

*Limonia acidissima* L. merupakan salah satu spesies dari famili Rutaceae. Tujuan dari penelitian ini adalah untuk menentukan struktur kimia senyawa kumarin ter-*O*-geranilasi dari akar *Limonia acidissima* L. serta menentukan aktivitas antikanker senyawa kumarin ter-*O*-geranilasi hasil isolasi terhadap sel kanker leher rahim HeLa. Ekstraksi dan isolasi senyawa kumarin ter-*O*-geranilasi dari akar *Limonia acidissima* L. menggunakan pelarut metanol yang dilanjutkan dengan fraksinasi dan pemurnian menggunakan berbagai teknik kromatografi, meliputi kromatografi cair vakum, kromatografi kolom tekan, dan kromatografi radial, menghasilkan dua senyawa kumarin ter-*O*-geranilasi, aurapten dan 8-*O*-geranilpsoralen. Struktur kedua senyawa kumarin ter-*O*-geranilasi tersebut ditetapkan berdasarkan metode spektroskopi, meliputi UV, IR, HR-ESI-MS, 1D NMR (<sup>1</sup>H-NMR dan <sup>13</sup>C-NMR), serta 2D NMR (HMQC dan HMBC). Uji aktivitas antikanker senyawa kumarin ter-*O*-geranilasi hasil isolasi menggunakan metode *microculture tetrazolium technique* (MTT) terhadap sel kanker leher rahim HeLa memperlihatkan nilai IC<sub>50</sub> berturut-turut 213,85 ± 0,02 μM dan 54,41 ± 0,02 μM yang dikategorikan tidak aktif.

**Kata kunci:** Kumarin ter-*O*-geranilasi, aurapten, 8-*O*-geranilpsoralen, *Limonia acidissima* L., antikanker

**Siti Mariyatul Ulfah, 2015, ISOLATION AND IDENTIFICATION OXYGERANYLATED COUMARIN COMPOUNDS FROM THE ROOT OF *Limonia acidissima* L. AND ANTICANCER ACTIVITY TO CERVICAL CANCER CELL. This final project is supervised by Dr. Mulyadi Tanjung, M.S and Tjitjik Srie Tjahjandarie, Ph.D, Departement of Chemistry, Faculty of Science and Technology, Airlangga University.**

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## ABSTRACT

*Limonia acidissima* L. is one species of Rutaceae family. The objectives of this research are to determine the chemical structure of oxygeranilated coumarin compounds from the root of *Limonia acidissima* L. and to determine anticancer activity of oxygeranilated coumarin compounds against HeLa cervical cancer cell. Extraction and isolation of oxygeranilated coumarin compounds from the root of *Limonia acidissima* L. are using methanol solvent followed by fractination and purification using various chromatographic techniques, including vacuum liquid chromatography, flash chromatography, and radial chromatography, yielded two oxygeranilated coumarin compounds, auraptene and 8-geranyloxypsoralen. The structure of both compounds was determined by spectroscopic methods, including UV, IR, HR-ESI-MS, 1D NMR ( $^1\text{H-NMR}$  and  $^{13}\text{C-NMR}$ ), and 2D NMR (HMQC and HMBC). The anticancer activity test of both isolated compounds against HeLa cervical cancer cells by microculture tetrazolium technique (MTT) showed  $\text{IC}_{50}$  values of  $213.85 \pm 0.02 \mu\text{M}$  and  $54.41 \pm 0.02 \mu\text{M}$  respectively were categorized inactive.

**Keywords:** Oxygeranylated coumarin, auraptene, 8-geranyloxypsoralen, *Limonia acidissima* L., anticancer