

SYNTHESIS AND CYTOTOXICITY TEST OF 7-HIDROXY-4'-METHOXYLAVONE AGAINTS CERVICAL CANCER CELL LINES (HeLa) AND COLON CANCER CELL LINES (WiDr)

Kurnia Nurfitria
13/350591/PPA/04099

ABSTRACT

A synthesized of 7-hydroxy-4'-methoxyflavone and its cytotoxicity against cancer cell lines has been investigated. Flavone was synthesized by oxidative cyclization of chalcone. Chalcone was made from 4-methoxybenzaldehydes, it was natural product from anetol of fennel oil. A compound of 2',4'-dihydroxy-4-methoxychalcone was prepared by Claisen-Schmidt condensation of 2,4-dihydroxyacetophenones with 4-methoxybenzaldehydes in presence of aqueous solution of potassium hydroxide and ethanol at room temperature. Oxidative cyclization of 2',4'-dihydroxy-4-methoxychalcone was done by using I₂ catalyst in DMSO with mol ratio (1:1) in 3 hour reflux to form 7-hydroxy-4'- methoxyflavone. The synthesized compounds were characterized by means of UV-Vis, FTIR, GC-MS/MS-direct, TLC-scanner, ¹H-NMR and ¹³C-NMR spectral data. The cytotoxicity test method was used by MTT assay against cervical cancer cell lines (HeLa) and colon cancer cell lines (WiDr). HeLa and WiDr cancer cell lines were treated by the compound test with the series doses concentration: 0.78; 1.56; 3.12; 6.25; 12.50; 25; 50, and 100 µg/mL for 24 hours incubation.

The results showed that 7-hydroxy-4'-methoxyflavone have successfully synthesized with a yield of 88.31% and a melting point of 263-265 °C. The cytotoxic test showed that the compound of 7-hydroxy-4'-methoxyflavone was moderately active to inhibit the growth of HeLa and WiDr cell lines. The IC₅₀ value were 25.73 µg/mL and 81.28 µg/mL for HeLa and WiDr cell lines repectively.

Keywords: *Flavone, cytotoxic test, HeLa and WiDr cell lines, anticancer*

SINTESIS DAN UJI SITOTOKSISITAS 7-HIDROKSI-4'-METOKSIFLAVON TERHADAP SEL KANKER SERVIKS (HeLa) DAN SEL KANKER KOLON (WiDr)

Kurnia Nurfitria
13/350591/PPA/04099

INTISARI

Senyawa 7-hidroksi-4'-metoksiflavin telah berhasil disintesis dan diuji sitotoksitas terhadap sel kanker. Flavon disintesis melalui siklisasi oksidatif senyawa khalkon. Khalkon yang dipakai dalam penelitian menggunakan 4-dimetoksibenzaldehida yang merupakan turunan bahan alam dari anetol yang terkandung di dalam minyak adas. Senyawa 2',4'-dihidroksi-4-metoksikhalkon disintesis melalui kondensasi Claisen-Schmidt dari 2,4-dihidroksiasetofenon dengan 4-dimetoksibenzaldehida dalam larutan KOH dan etanol pada suhu ruang selama 48 jam. Siklisasi oksidatif 2',4'-dihidroksi-4-metoksikhalkon dilakukan menggunakan katalis I₂ dalam DMSO dengan perbandingan mol (1:1) mol, direfluks selama 3 jam untuk membentuk 7-hidroksi-4'-metoksiflavin. Senyawa hasil sintesis dikarakterisasi berdasarkan data spektrum UV-Vis, FTIR, GC-MS/MS-*direct*, KLT-*scanner*, ¹H-NMR dan ¹³C-NMR. Senyawa hasil diuji aktivitas sitotoksik menggunakan metode uji MTT terhadap sel kanker serviks (HeLa) dan sel kanker kolon (WiDr). Uji sitotoksik dilakukan dengan konsentrasi dosis larutan uji yang digunakan adalah 0,78; 1,56; 3,12; 6,25; 12,50; 25; 50 dan 100 µg/mL dengan lama inkubasi perlakuan selama 24 jam.

Hasil penelitian menunjukkan bahwa 7-hidroksi-4'-metoksiflavin telah berhasil disintesis dengan rendemen sebesar 88,31% dan titik leleh sebesar 263-265 °C. Hasil uji sitotoksik menunjukkan senyawa 7-hidroksi-4'-metoksiflavin cukup aktif menghambat pertumbuhan pada sel HeLa dan WiDr. Nilai IC₅₀ secara berturut-turut sebesar 25,73 µg/mL dan 81,28 µg/mL pada sel HeLa dan WiDr

Kata Kunci: Flavon, antikanker, uji sitotoksik, sel HeLa dan WiDr