Penentuan struktur molekul derivat kumarin dari kulit batang Calophyllum biflorum Hend.& Ws. dan pengaruhnya terhadap pertumbuhan In vivo tumor kelenjar susu mencit C3H = Determination of molecular structure of coumarin derivate from the stem bark of calophyllum bif lorum Hend.& Ws. and it's effect on the in vivo growth of c3h mammary tumor cells

Lies K. Wibisono, author

Abstrak

ABSTRAK
Calophyllum biflorum Hend. & WS. merupakan tanaman hutan tropis dari keluarga Guttiferae yang banyak terdapat di Indonesia dan di Malaysia. Berbagai jenis Calophyllum digunakan sebagai obat tradisional, antara lain sebagai obat penyakit kulit, rematik, dan kanker.

Penelitian ini bertujuan untuk mengisolasi dan menentukan struktur molekul senyawa derivat kumarin dari kulit batang Calophyllum biflorum, serta pengaruhnya terhadap pertumbuhan in vivo tumor transplantabel kelenjar susu mencit C3H.

Isolasi senyawa dilakukan dengan cara maserasi serbuk kulit batang Calophyllum biflorum dengan menggunakan pelarut petroleum eter. Senyawa yang dikandung dalam ekstrak petroleum eter dipisahkan dengan kromatografi kolom dengan silika gel sebagai fase diam, campuran petroleum eter dan etil-asetat, sebagai fase geraknya. Pemurnian dilakukan dengan Cara rekristalisasi. Senyawa yang berhasil diisolasi, diidentifikasi menggunakan spektrofotometer ultra ungu dan infra merah, spektrometer 1H-NMR dan '3C-NMR, spektrometer massa, dan diffraksi sinar-X. Berdasarkan data spektrometri, analisis diffraksi sinar-X, dan pustaka, diketahui senyawa tersebut mempunyai kerangka kumarin dan dikenal sebagai senyawa kalanon.

Untuk mengetahui pengaruh kalanon terhadap pertumbuhan in vivo tumor transplantabel kelenjar susu, digunakan mencit C3H yang dibagi dalam kelompok kontrol tanpa perlakuan, kelompok kontrol pelarut yang disuntik 0,1 mL pelarut PEG 400, dan 4 kelompok perlakuan masing-masing disuntik 0,1 mL larutan kalanon dalam PEG 400 dengan dosis 1 mg/mL, 2 mg/mL, 4 mg/mL, dan 8 mg/mL. Penyuntikan secara subkutis di sekitar tumor dilakukan tiga kali seminggu selama 4 minggu. Dari hasil uji statistik non parametrik menurut metode Friedman terhadap besar tumor dan dari grafik pertumbuhan besar tumor rata-rata setiap minggu, terdapat perbedaan yang bermakna antara kelompok dosis 4 mg/mL dibandingkan dengan kedua kelompok kontrol dan kelompok dosis lainnya. Hal ini didukung oleh gambaran morfologis sediaan mikroskopis dengan pewarnaan hematoksilin-eosin.
<hr><i>ABSTRACT
Calophyllum biflorum belongs to the Guttiferae family, found in tropical rain forests in Indonesia and Malaysia. Many of the calophyllum species are used as traditional medicine by local people, among other things for treatment of skin disease, rheumatism, and cancer.

The aim of this study was to isolate and determine the molecular structure of coumarin derivate from the stem bark of C. biflorum and it's effect on the in vivo growth of a transplantable C3H mammary tumor cells.

Isolation of the compounds were done by maceration of stem bark powder of C. bifiorum in petroleum ether. The compounds in petroleum ether extract were separated by column chromatography using silica gel as the stationary phase, petroleum ether and ethyl acetate mixture as the mobile phase. Purification of this compound was done by recrystallization. The pure compound was identified by using UV and IR. spectrophotometers, IH-NMI and 13C-NMR, mass spectrometer, and x-ray diffraction spectroscopy. Based on the data obtained, it was concluded that the compound has a coumarin skeleton and was known as calanone.

To know the effect of calanone on the in vivo growth of transplantable C3H mammary tumor cells, C3H mice were used which were divided into : one group of untreated control, one group of solvent control (injected with 0,1 mL PEG 400) and four treated groups, each of which were injected subcutaneously nearby the tumor with 0,1 mL of 1 mg/mL, 2 mg/mL, 4 mg/mL, and 8 mglmL of calanone in PEG 400 solvent respectively. The injection were given three times a week, for four weeks. By using Friedman test, for non parametric statistical analysis of the weekly observed tumor volume, and from the graphic of the weekly mean tumor volume of each group , it was shown that there was a significant decrease in the tumor growth of the group treated with calanone solution of 4 mg/mL dosage, compared to the control or other groups. This effect can also be seen histopathologically on the hematoxylin-eosin microscopic specimens.</i>