ISOLASI, IDENTIFIKASI DAN UJI TOKSISITAS SENYAWA AKTIF FRAKSI METILEN KLORIDA DARI TANAMAN PURWOCENG

(*Pimpinella alpina* Molk)

Oleh:

Yayuk Astuti
J2C001183

RINGKASAN

Tanaman Purwoceng (*Pimpinella alpina* Molk) selama ini telah dikenal sebagai obat penggugah gairah seksual (afrodisiak) dan obat peluruh air seni (diuretik). Walaupun telah dikenal, namun penelitian mengenai kandungan senyawa dan toksisitasnya belum banyak dilakukan. Pada penelitian sebelumnya telah dilakukan identifikasi kandungan kimia purwoceng fraksi non-polar, sedangkan penelitian terhadap fraksi semi polar belum dilakukan. Penelitian ini bertujuan untuk mengetahui kandungan senyawa yang terkandung dalam fraksi metilen klorida tanaman purwoceng serta toksisitas fraksi metilen klorida, etil asetat, n-butanol dan n-heksan.

Penelitian ini dibagi menjadi 2 tahap. Tahap pertama pemisahan, pemurnian dan identifikasi senyawa hasil isolasi. Isolasi senyawa dilakukan melalui metode maserasi dengan pelarut metanol yang dilanjutkan dengan fraksinasi menggunakan pelarut n-heksan, metilen klorida, etil asetat dan n-butanol. Isolasi senyawa dilanjutkan terhadap fraksi metilen klorida, sedangkan pemisahan dan pemurnian digunakan metode kromatografi kolom dan KLT preparatif. Identifikasi terhadap senyawa yang diperoleh meliputi uji golongan kimia serta analisis dengan GC-MS. Toksisitas senyawa-senyawa yang terkandung dalam fraksi metilen klorida, etil asetat dan n-butanol diuji menggunakan metode *Brine Shrimp Lethality Test (BSLT)* dan hasilnya diolah menggunakan metode *Finney* untuk mendapatkan harga LC_{50}.

Data hasil isolasi diperoleh 2 noda (Fx, Fy) dengan Rf 0.07 untuk Fx dan 0.82 untuk Fy. Hasil GC-MS untuk Fx dengan T_R 15.717 dan 17.608 diduga merupakan senyawa asam heksadekanoat dan asam oktadekanoat. Sedangkan untuk Fy, diperoleh senyawa benzil benzoat dengan T_R 13.150. Dari hasil uji toksisitas diketahui harga LC_{50} fraksi metilen klorida , etil asetat, n-butanol dan n-heksan berturut-turut sebesar 18.76 µg/mL, 18.76 µg/mL, 14.08 µg/mL dan 11.07 µg/mL. Berdasarkan hasil analisis GC-MS terhadap senyawa hasil isolasi, diusulkan bahwa senyawa yang terkandung dalam ekstrak metilen klorida fraksi I adalah asam heksadekanoat, asam oktadekanoat dan benzil benzoat. Hasil uji toksisitas dengan BSLT menunjukkan bahwa keempat fraksi tersebut berpotensi sebagai antikanker.

SUMMARY

Purwoceng (*Pimpinella alpina* Molk) is a plant that is widely used as both diuretic and aphrodisiac. Although it has been widely used, the researches of its chemical compound and toxicity has not been done yet. In previous research had been identified the chemical compound from non polar fraction of purwoceng, but neither had been the semi polar fraction. The purposes of the researches are to do the isolation, identification and toxicity test of the compound from semi polar fraction (methylene chloride) of purwoceng.

The research consists of two steps. In the first step covered isolating, purificating and identifying of resulted isolation compound. Compound isolation was done by maseration method using methanol which is continued by fractionation using n-hexan, methylene chloride, acetic ethyl and n-buthanol. Compound isolation was continued with methylene chloride fraction, while the separation and purification used preparative TLC and column chromathography methods. The identification of the resulted compound consist of phytochemistry screening and analysis by GC-MS. The compound activity which is contained in methylene chloride, ethyl acetat, n-buthanol and n-hexane fraction were tested using brine shrimp lethality test and the result are processed by the f*inney* method to get the value of LC_{50}.

The result isolation obtained 2 stains (Fx, Fy) with Rf 0.07 for Fx and 0.82 for Fy. GC-MS analysis for Fx with T_R 15.717 and 17.608 was predicted to represent compound of heksadekanoat acid and oktadekanoat acid. While for Fy, was predicted to represent compound of benzil benzoat with T_R 13.150. From result toxicity test was known value of LC_{50} of factions of methylene chloride , acetic ethyl, n-buthanol and n-heksane successively equal to 18.76 µ g/mL, 18.76 µ g/mL, 14.08 µ g/mL and 11.07 µ g/mL. Based on the analysis of GC-MS the isolation resulted compounds, it was suggested that the compounds contained in methylene chloride fraction I were hexadekanoic acid,, octadecanoic acid and benzyl benzoate. Based on LC_{50} value found that the all of fraction had potency as anticancer.

DAFTAR PUSTAKA

Aboutabl, E. A., El-Azzouny, A. A., Afifi, M. S.,1998, "Phytochemistry", 48 (3), p. 455.

Ariens, E. J., Mutscler, E., Simonis, A. M., 1993, "Toksikologi Umum", Gadjah Mada University Press, Yogyakarta.

Cornu, A., Carnat, A. P., Martin, B., Lamaison, J. L., and Berdague, J. L., 2001, "Solid-Phase Microextraction of Volatile Component from Natural Grasslan Plants", 49(1), pp. 208-209.

Culvenor, C. C. J., Fitzgerald, J. S., 1963, "A Field Method for Alkaloid Screening of Plant", Pharm. Sci, 52, p.303-304.

Dewiyanti, Indah, D., Lenny, S., Pusra, D. N. L. , 2004, "J. Gulma sebagai Alternatif Pengobatan Diabetes Melitus", vol. 39, No. 1, hlm. 19.

Fessenden, R. J., & Fessenden, J. S., 1983, "Techniques & experiments for Organik Chemistry", Willard Grant, Boston, pp. 105-108.

Gunawan, D., 2000, "Ramuan Tradisional untuk Keharmonisan Suami Istri", cetakan 2; Penebar Swadaya, Jakarta, hlm. 52-56.

Harborne, J. B. (a.b. Padmawinata, K., Sudiro, I.), 1996," Metode Fitokimia", cetakan 2, ITB, Bandung, hlm. 123-152.

Heyne, K. (a.b. Badan Litbang Kehutanan), 1987, "Tumbuhan Berguna Indonesia III", Yayasan Sarana Wana Jaya, Jakarta, hlm. 1550.

Ho Lee, Seung, gao Li, Hyo-Jin Kim, et al, 2003, "Two New Furanocoumarins from the Root of *Angelica dahurica*", 24(11), pp. 1699-1700.

Kader, M. S. A., 2003, "New Ester and Forukumarins from the Root of *Pithuranthos tortuosus"*, 24(1), pp. 48-51.

Kisiel, W., Janeczo, Z., Zgud-Walaszek, M., 1998, "Phytochemistry", 49(7) pp. 2031-2033.

Koensumardiyah, 1987, Tesis Pasca Sarjana Farmasi, Universitas Gadjah Mada, Yogyakarta, hlm. 1-2.

Kumar, R., 1999, "A Mass Spectral Guide for Quick Identification of Phtalate Esters", American Laboratory Article: Washington, pp 34-35

Loomis, T. A., 1978. " Toksikologi Dasar", Edisi Ketiga, IKIP Semarang Press, hlm. 16-20.

Manske, R., H., F., 1950, "Marion in The Alkaloids", vol.1, pp. 211-217.

Marcias, M. J., 1994, "4-(B-D-Glucopyranosyloxy) Benzoic Acid, a Characteristic Phenolic Constituent of Apiaceae", 23(8), pp. 1811-1812.

McLafferty, F.W., 1980, "Interpretation of Mass Spectra", University Science Books, New York.

McLaughlin, J.L. Chang, D. L., 1991, "Bench Top Bioassay for the Discovery of Bioactive Natural product; An Update, the UNESCO regional Workshop on the Bioassay of Natural Product with Special Emphasis on Anticancer Agent", University of Malaya, Kuala Lumpur, pp. 1-3.

Meyer, B. N., 1982, "Brine Shrimp : A Convenient General Bioassay for Active Plant Constituent", *Journal of Medicinal Plant Research*, 45, 31-33.

Nordin, 1985, "Aspect of Natural Product Chemistry, Proceeding, The Phytochemical Survey", Dept. Chemistry, UPM, Malaysia.

Pramono, S.; 1988, “Pemisahan Flavonoid” , Kursus Singkat Pemisahan Kimia, PAU Bioteknologi UGM, Yogyakarta, 7-9.

Santos, P. M., Oliveira, M. M., Barroso, J. G., and Scheffer, J. C., 1998, “Essential Oils from Hairy Food Cultures and from Fruit and Roots of *Pimpinella anisum”*, 48(3), pp. 455-460.

Sastrohamidjojo, H., 1991, “Kromatografi”, edisi 2, cetakan 1, Liberty: Yogyakarta.

Sastrohamidjojo, H., 1991, “Spektroskopi”, edisi 2, cetakan 1, Liberty: Yogyakarta.

Silverstein, R. M., Bassler, C. G., Morril, T. C., (a.b. Hartono, V.P.), 1986, “Penyidikan Spektrometrik Senyawa Organik”, Erlangga: Jakarta.

Stahl, E. and Herting, D., 1976, “Die Verteilung Von Inhaltsstoffen in Drei *Pimpinella-arten*”,vol. 15, pp. 997-1001.

Sudjadi, 1985, “Penentuan Struktur Senyawa Organik”, cetakan 1, Ghalia: Jakarta.

Supriadi, 2001, “Tumbuhan Obat Indonesia, Penggunaan dan Khasiatnya”, Pustaka Populer Obor.

Suzery, M., Proceeding Seminar Nasional Hasil Penelitian MIPA, 2004, “Extraction of Essential Oil from Purwoceng (*Pimpinella alpina* Molk) Using Vacum Steam Destilation”, pp. 229-231.

Suzery, M., Media Medika Indonesia, “Isolasi dan Karakterisasi Stigmasterol dalam Tanaman Purwoceng (*Pimpinella alpina* Molk)”, 39 (1), pp. 37-39.

Taufiqqurachman, 1999, Tesis; Pasca Sarjana Kedokteran, Universitas Diponegoro, semarang, hlm. 1-4.

Tjitrosoepomo, G., 1988, “Taksonomi Tumbuhan Spermatophyta”, Gadjah Mada University Press: Yogyakarta, hlm. 315.