ABSTRAK

Pacing merupakan tanaman liar yang belum banyak digunakan dalam dunia pengobatan. Masyarakat secara empiris menggunakan pacing untuk menurunkan kadar kolesterol. Untuk dapat digunakan dalam pengobatan secara formal diperlukan bahan yang tersandar, dosis yang sesuai dan dijamin keamanannya. Penelitian ini bertujuan untuk standarisasi, uji antihiperlipidemia serta uji toksisitas akut ekstrak air herba Pacing (*Costus speciosus*, J.Koenig) Sm. (CS)

Ekstrak air CS dibuat dengan metode infundasi. Ekstrak cair dikeringkan dengan *freeze dryer*. Ekstrak kering yang diperoleh dilakukan standarisasi non spesifik (sesuai Farmakope Herbal Indonesia) dan spesifik (penetapan kadar fenolik total dan flavonoid total secara spektrofotometri visibel, serta kadar diosgenin secara HPLC). Uji antihiperlipidemia dilakukan secara *in vivo* menggunakan tikus putih jantan galur Wistar yang dibuat hiperkolesterol dengan pemberian Propil tiourasil (PTU) 0,1%. Hewan uji dikelompokkan secara random menjadi 7 kelompok: kelompok normal, kontrol negatif, Simvastatin 7,2 mg/kgBB, NaCMC, ekstrak air dosis 50, 100, dan 200 mg/kg BB. Simvastatin dan ekstrak air diberikan pada hari ke-14 setelah pemberian PTU 0,1%, pemberian dilakukan selama 14 hari. Sampel darah diambil pada hari ke-0, 14 dan 28 untuk dilakukan penetapan kadar kolesterol, LDL/HDL dan trigliserida secara enzimatik. Pada hari ke-28 tikus dikorbankan dan diambil organ heparnya, sebagian digunakan untuk ditetapkan kadar kolesterolnya dan sebagian dibuat preparat histopatologi.

Uji toksisitas akut dilakukan menggunakan tikus putih jantan sebagai hewan uji. Dosis ekstrak air yang digunakan adalah 2000 dan 5000 mg/kg BB, diberikan secara peroral. Pengamatan dilakukan terhadap kondisi gejala fisik setelah 24 jam dan dilanjutkan sampai 14 hari setelah pemberian. Pengamatan juga dilakukan terhadap gambaran histopatologi organ jantung, hepar, paruginjal, dan lambung.

Hasil penelitian menunjukkan ekstrak air dengan Parameter non spesifik (kadar air 5,0 kadar abu total 5,9% logam Cd<0,001ppm; Pb<0,096ppm, tidak mengandung *E.coli* dan *S.aureus*); Parameter spesifik meliputi kadar fenolik total 15,152 EAG mg/g ekstrak, kadar flavonoid total 9,33 ER mg/g ekstrak dan kadar diosgenin 0,279%. Uji antihiperlipidemi menunjukkan bahwa ekstrak air dengan dosis 200 mg/kg BB dapat menurunkan kadar kolesterol setara dengan simvastatin dosis 7,2 mg/kgBB, dapat menurunkan kadar trigliserida 12.08%, LDL 10,% dan menaikkan kadar HDL 32,19%. Hasil pengamatan histopatologi hepar menunjukkan bahwa Ekstrak air dengan dosis 200 mg/kg BB dapat melindungi hepar dari kerusakan yang berlanjut akibat paparan PTU 0,1%. Hasil uji toksisitas akut menunjukkan bahwa tidak ditemukan tikus yang mati 24 jam setelah pemberian ekstrak, dan 14 hari setelah pemberian ekstrak. Gambaran histopatologi organ jantung, hepar, paru-paru dan lambung tidak menunjukkan adanya kelainan.

Dapat disimpulkan bahwa ekstrak air herba Pacing terstandar memiliki aktivitas sebagai antihiperlipidemia pada dosis 200 mg/kg BB dan memiliki LD_{50} lebih dari 5000 mg/kg BB

Kata kunci : *Costus speciosus*, standardisasi, antihiperlipidemia, toksisitas akut

ABSTRACT

Pacing is a wild plant that has not been widely used in the world of medicine. People empirically use pacing to lower cholesterol levels. To be used in the formal treatment, standatdized material and safety study is required. This study aims to standardize, antihyperlipidemic and acute toxicity test of Pacing (*Costus speciosus*, J.Koenig) Sm. (CS) water extract.

Costus speciosus water extract is made by infundation method. The liquid extract was concentrated above the water bath and then dried using a freeze dryer apparatus. The dry extract obtained was standardized in term of non-specific and specific standardization. Non-specific standardization include determination of moisture content and total ash content by gravimetric, heavy metal (Cd and Pb), and microbial contamination (*E.coli* and *S.aureus)* Specific standardization include the determination of total phenolic and total flavonoids by visible spectrophotometry, and diosgenin levels by HPLC. The Antihyperlipidemic test was performed *in vivo* using propylthiouracil (PTU) 0.1%induced hyper cholesterol male rats. Test animals were grouped randomly into 7 groups: normal group, negative control, Simvastatin dose of 7.2 mg/kgBW, NaCMC, CS extract dose 50, 100, and 200 mg/kg BW. Simvastatin and CS extract were administered on the 14th day after 0.1% PTU administration, were administered for 14 days. Blood samples were taken on days 0, 14 and 28 for determination of cholesterol, LDL / HDL and triglyceride levels by enzymatic method. On the 28th day, the rats were sacrificed and the organ were taken, partially were used to detrmine the cholesterol level and partially were made histopathologic preparations
Acute toxicity tests were performed using male white rats as test animals. Dosage extracts used were 2000 mg/kg body weight and 5000 mg/kg BW were administered orally. Observations were made on the condition of physical symptoms after 24 hours and continued until 14 days after administration. There were also observations of histopathological features of the heart, liver, lung, renal and stomach.

The results showed that CS extract has non-specific parameters including 5.0% moisture content, total ash content of 5.9%, Pb<0.096ppm, Cd<0.001ppm, *E.coli* and *S.aureus* not detected; Specific parameters include the total phenolic content of 15.152 GAE mg/g extract, total flavonoids 9.33 RE mg/g extract and diosgenin 0.279%. The results of the antihyperlipidaemic test showed that CS extract dose 200 mg/kg BW can lower cholesterol level equivalent to simvastatin dose 7,2 mg/kg body, can decrease triglyceride level 12.09% and LDL level 10,56%, and raise 32.19% of HDL level. Histopathologic hepatic observational results showed that CS extract with dose 200 mg/kg body weight can protect the liver from continued damage due to exposure PTU01%. Acute toxicity test results showed that no died rats for 24 hours and 14 days after administration of the extract. Histopathological features of the heart, liver, lung, and stomach do not show any abnormality.

It can be concluded that the standardized *Pacing* water extract has antihyperlipidemic activity at a dose of 200 mg/kg BW and has LD50 greater than 5000 mg/kg BW on male white rats.

Keywords: *Costus speciosus*, standardization, antihyperlipidemic, acute toxicity