ABSTRACT

RUQIAH GANDA PUTRI PANJAITAN. Hepatoprotector Activity of the Roots of Pasak Bumi (Eurycoma longifolia Jack.). Under the direction of WASMEN MANALU, EKOWATI HANDHARYANI, and CHAIRUL.

The hepatoprotector activity of pasak bumi (Eurycoma longifolia Jack.) roots was evaluated in carbon tetrachloride (CCl₄)-induced rats. Hepatotoxic effects of CCl₄ was tested followed by administration of methanol extract and its derived fractions (n-hexane, chloroform, ethyl acetate, and methanol-water) on liver functions, and the selection of the extract or fraction which have similar activity to silymarin as a commercial hepatoprotector. Liver functions were monitored by measuring serum alanine transaminase (ALT), aspartate transaminase (AST), alkaline phosphatase (ALP), total bilirubin, and total protein concentrations. The median lethal dose (LD₅₀), median effective dose (ED₅₀), and subchronic toxicity of selected fraction were also evaluated. The study was continued by application of therapeutic dose. The results of experiment demonstrated that treatment of CCl₄ increased ALT, AST, ALP, total bilirubin, and decreased total protein. Histopathologically, administration of CCl₄ by 0.1 ml/kg body weight caused multifocal degeneration. The livers treated with methanol extract and its derived fractions showed no significant difference in liver functions. In addition, administration of methanol-water fraction by 500 mg/kg body weight had similar activity as compared to silymarin. Median lethal dose (LD₅₀) and median effective dose (ED₅₀) of methanol-water fraction in rats were respectively 34.65 g/kg body weight and 784.00 mg/kg body weight. Alanine and aspartate transaminase enzymes, urine evaluation, and histopathological studies confirmed the hepatic cells and renal was still normal after three months administration of methanol-water fraction of pasak bumi roots at dose 1000 mg/kg body weight of male rat. The therapeutic dose administration of methanol-water fraction (1000 mg/kg body weight) prior to CCl₄-induced resulted in suppression of ALT (91.78±9.63 U/L) and AST (249.50±20.5 U/L), and the CCl₄-induced prior to therapeutic dose administration of methanol-water fraction (1000 mg/kg body weight) resulted in suppression of ALT (136.97±46.19 U/L) and AST (322.80±112.89 U/L) as well. Histopathological and ultrastructure studies confirmed that methanol-water fraction protected hepatic cells. It is concluded that methanol-water fraction of pasak bumi roots has a hepatoprotector activity.

Key words: Eurycoma longifolia Jack., hepatoprotector, LD₅₀, ED₅₀, subchronic toxicity