

Blood profiles and histopathological changes of liver and kidney tissues from male sprague dawley rats treated with ethanol extracts of *Clinacanthus nutans* leaf

ABSTRACT

Background: *Clinacanthus nutans* (*C. nutans*) or commonly known as ‘Sabah snake grass’ or ‘Belalai Gajah’ is a widely known herb used to treat Herpes simplex virus (HPV), skin rashes and snake bite.

Objective: This study aim is to evaluate the toxicity of ethanol extract of *C. nutans* leaf extract on 90-day sub chronic toxicity study in male Sprague Dawley rats.

Method: A total of 40, 6-week male Sprague Dawley rats were divided into 5 groups (n=8) namely control, vehicle (10% DMSO), and 3 treatment groups which received a daily oral dose of *C. nutans* leaf extract at 75 (low dose), 125 (medium dose), and 250 (high dose) mg/kg for 90 days via oral gavage. Blood sample were collected at the end of the experiment for evaluation of haematology and serum biochemistry. Selected organs including liver and kidneys were collected for histopathological examination. The toxicity were evaluated by observing and evaluating the changes of body weight, haematology and serum biochemistry parameters and histopathology changes of liver and kidney tissues.

Results: There was no mortality sign of sub chronic toxicity observed during the observation period. Body weight, haematology parameters and organ relative weight showed no significant difference in control and treatment groups meanwhile in serum biochemistry parameters, observed a significant difference ($P<0.05$) in level of LDH and creatinine kinase in high dose group showed significant lower ($P<0.05$) compared to control. Nevertheless the levels of LDH and creatinine kinase were still in normal range. Significant abnormal histopathological changes ($P<0.05$) such as centrilobular sinusoid dilatation/centrilobular necrosis, hydropic degeneration/cytoplasmic vacuolation and inflammation were observed in liver tissues in medium and high dose groups. Kidney tissue showed a significant abnormal histopathology changes ($P<0.05$) such as granular cast and cellular cast were observed in medium and high dose group.

Conclusion: It is concluded that 125-250 mg/kg ethanol extract of *C. nutans* leaves induce hepatotoxicity and renal toxicity.

Keyword: Sub chronic oral toxicity study; *Clinacanthus nutans*; Haematology; Serum biochemistry; Histopathology changes