

## ABSTRACT

Firdha Nurhaliza. 24020122130109. **The Effect of Green Meniran (*Phyllanthus niruri* L.) Extract on the Histopathology of the Femoral Muscle of Wistar Rats (*Rattus norvegicus*) Induced by the Chemotherapeutic Agent Cisplatin.** Supervised by Silvana Tana and Rasyidah Fauzia Ahmar.

Cisplatin is an effective chemotherapeutic agent; however, it has the potential to induce toxicity in skeletal muscle through increased oxidative stress and inflammatory responses, leading to muscle tissue damage. *Phyllanthus niruri* L. has been has possessed antioxidant and anti-inflammatory activities, which may help reduce tissue damage. This study aimed to analyze the histopathology of the femoral muscle of Wistar rats induced with cisplatin after the administration of *P. niruri* leaf extract. The study employed a Completely Randomized Design (CRD) with four treatment groups: P0 (normal control), P1 (cisplatin), P2 (cisplatin + *P. niruri* 200 mg/kg BW), and P3 (cisplatin + *P. niruri* 400 mg/kg BW). The observed variables included histopathological structure, muscle fiber diameter, fascicle diameter, cross-sectional area (CSA), and muscle fiber density. Data were analyzed using ANOVA followed by Duncan's test. The results showed that the fiber diameter of group P1 (29,10  $\mu\text{m}$ ) was significantly different compared to the other groups, group P2 (35,06  $\mu\text{m}$ ) was not significantly different compared to group P3 (35,61  $\mu\text{m}$ ) but was significantly different compared to group P0 (37,09  $\mu\text{m}$ ), and groups P3 and P0 were not significantly different. Fascicle diameter significantly decreased in P1 (205.21  $\mu\text{m}$ ), while P0, P2, and P3 (239,47; 234,80; 236,48  $\mu\text{m}$ ) showed no significant differences. Perimysium thickness significantly increased in P1 (35,88  $\mu\text{m}$ ), whereas P0, P2, and P3 (23,66  $\mu\text{m}$ ; 21,68  $\mu\text{m}$ ; 21,72  $\mu\text{m}$ ) were not significantly different. CSA results did not show a significant difference ( $p>0.05$ ). The number of fibers in P1 tended to be lower compared to the other groups. In conclusion, *P. niruri* extract at a dose of 400 mg/kg BW showed potential protective in maintaining muscle fiber structure.

**Keywords:** *antioxidant, cross sectional area, muscle atrophy, oxidative stress, toxicity*