

Effect of Oral Curcumin and Immobilization on The Diameter of Skeletal Muscle Fiber in *Rattus Norvegicus*

Abstrak :

*Immobilization may result in skeletal muscle atrophy, in which the diameter of muscle fiber is decreased. The stimulus response at cellular level presents as the activation of Tumor Necrosis Factor (TNF)- α and NF- κ B (Nuclear Factor- κ B), which results in the degradation of muscular protein. Curcumin is a yellow pigment substance commonly found in plants belonging to the genus *Curcuma longa* (kunyit) and *Curcuma xanthorrhiza* Roxb (temulawak). One of the actions of Curcumin is inhibition of the NF- κ B pathway activation. The objective of this study was to analyze the effect of oral curcumin and immobilization on the diameter of skeletal muscle fiber of *Rattus norvegicus*. Subjects of the study were male *Rattus norvegicus* aged 3-4 months, with bodyweight of 150-200 grams. Subjects were divided into three groups, a control group, an immobilization group without curcumin, and an immobilization group with oral curcumin, each of which comprised 11 subjects. Immobilization using a splint was applied to the soleus muscle for 2 weeks. Oral curcumin was given to the immobilization group in a dose of 400 mg/rats (2 g/KgBW) single dose once a week. The diameter of soleus muscle was measured histopathologically with HE staining, under a light microscope using a magnification of 400x. Results showed that the diameter of skeletal muscle fiber in the immobilization group was reduced 42.41% and 26.48% in the immobilization group with curcumin supplementation the reduction was 26.48%, as compared to the control group. There was significant difference ($p < 0.05$) in the diameter of skeletal muscle fiber between control, immobilization, and immobilization with curcumin supplementation groups. In conclusion, the addition of oral curcumin significantly reduces atrophy of soleus muscle in rats immobilized for 2 weeks.*

Keyword :

curcumin, immobilization, skeletal muscle

Daftar Pustaka :

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