

The preventive role of Raja banana peel (*Mussa paradisiaca sapientum*) extract as exogenous antioxidant in reducing atherosclerosis risk after exercise intervention

ABSTRACT

Excessive exercise training can act as a trigger in the increase of free radicals, inducing oxidative damage which generate to the development of atherosclerotic plaques. Therefore, the need of exogenous antioxidants become essential to be supplemented before exercise to reduce the negative effect of ROS. It can be sourced from methanolic extract of Raja banana peel (*Musa paradisiaca sapientum*) that has been investigated in vitro for its ability to produce antioxidant defense systems. Therefore, this study was purposed to investigate the preventive role of Raja banana peel methanol extract administration in reducing the risk of atherosclerosis after exercise training with moderate and high-intensity by observing the aorta histopathology of *Rattus norvegicus* Wistar strain rats. In this study, a total of 28 male white rats were grouped and treated in different exercise intervention level: moderate and high-intensity during 60 h and administered with the extract in the same dose of 400 mg/kg, except the control group. The histopathology of aorta rats was observed using hematoxylin and eosin (HE) staining. The data were statistically interpreted with the Mann-Whitney analysis ($p < 0.05$). Our finding showed that aortic damage (100%) followed by the release of macrophages (85.71%) and intracellular lipid (71.42%) were higher obtained from the group with high-intensity exercise activity than the moderate. Statistically, this damage can be significantly reduced in the group with high exercise intensity after treating with banana peel extract (0,0142 or $p < 0.05$). The same effect of the extract also found in the group with moderate-intensity exercise, the percentage of aortic damage was lower than that of control group. Thus, it can be concluded that the methanolic extract of Raja banana peel can be promoted to be an effective exogenous antioxidant to prevent oxidation stress condition after exercise intervention.

Keyword: Raja; *Mussa paradisiaca sapientum*; Peel; Aorta; Intensity; Atherosclerosis