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Impact of dietary red palm oil on antioxidant status and liver histhopathology in male wistar rats

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Abstract

Antioxidant status and histopathological conditions in male rats following the dietary consumption of red palm oil were investigated in a rat model. Male Wistar rats were randomly divided into four groups. Group 1 (n=5) received no RPO supplementation and served as the control while group 1 (n=6), group 2 (n=6) and group 3 (n=6) received 1 ml, 2 ml and 4 ml RPO respectively. Liver and plasma ferric reducing antioxidant power, plasma total polyphenols, total glutathione in the red blood cells as well as catalase, glutathione peroxidise and superoxide dismutase activities in the red blood cells and liver were determined. Our results showed no significant differences ($p>0.05$) in both liver and plasma ferric reducing antioxidant power, plasma polyphenols and total glutathione in the red blood cells in all palm oil fed groups when compared with the control group. Catalase activities significantly increased ($p<0.05$) at both 2 ml and 4 ml red palm oil in both the liver and red blood cells. There was no significant ($p>0.05$) difference in the liver glutathione peroxidase activities in palm oil fed groups while glutathione peroxidase activities in the red blood cells significantly ($p<0.05$) increased at 2 ml and 4 ml red palm oil when compared with the control group. Red palm oil did not significantly increase liver superoxide dismutase while its activities were increased in the red blood cells. There were no histopathological alterations in the liver of palm oil fed groups when compared with the control rats. In conclusion, red palm oil could up-regulate the levels of antioxidant enzymes and hence, its dietary consumption could help to boost antioxidant status in the body and thus promote overall good health.