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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.

Biography

Oluwafemi.O Oguntibeju is an Associate Professor and Group Leader (Nutrition and Chronic Disease Research Unit) at the Oxidative Stress Research Centre in the Department of Biomedical Sciences, Faculty of Health & Wellness, Cape Peninsula University of Technology Bellville, South Africa. He lectures and supervises postgraduate students and collaborates with national and international scientists. Over the years, he has been involved in the field of nutrition and HIV/AIDS and related-public health issues but more recently on natural products and diabetes. He has published over 90 scientific papers in peer-reviewed journals, presented over 30 papers at national and international conferences and reviewed manuscripts for over 30 international scientific journals. He has received various awards such as the Gold Research Excellence Award at his current university. Prof O.O Oguntibeju is a National Research Foundation (NRF) C-rated researcher and holds a master degree in Biochemistry from the University of Ibadan, Nigeria and a doctoral degree in Biomedical Science at the Central University of Technology, Bloemfontein, South Africa. He is a Chartered Scientist (CSci, UK) and Fellow of the Institute of Biomedical Science, London. He enjoys reading and music.