

Effects of Virgin Coconut Oil on the Histomorphometric Parameters in the Aortae and Hearts of Rats Fed with Repeatedly Heated Palm Oil

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Abstract : Objective: To investigate the effects of virgin coconut oil (VCO) on histomorphometric changes in the aorta and heart of thermoxidized palm oil-fed rats. Methods: Thirty two male Sprague-Dawley rats were divided into four groups: control group fed with normal diet; 5 times heated palm oil-fed group (5HPO) fortified with 15% w/w of 5HPO; VCO group supplemented with 1.42 ml/kg of VCO; and 5HPO + VCO group. The treatment lasted for four months. Upon sacrifice, aortic and heart tissues were processed for light microscopic studies. Results: Light microscopic studies showed thickened intima and media of the aorta in two out of eight rats in the 5HPO group only, while the rest of the rats did not show any thickening of either the intima or media of the aorta. Intima media area (IMA) in the VCO, 5HPO and 5HPO+VCO was significantly increased compared to the control group. Circumferential wall tension (CWT) and tensile stress (TS) in the aorta of 5HPO showed significant increase compared to the other groups. Cardiomyofibre width in 5HPO group showed significant increase in size compared to the control, VCO and 5HPO+VCO groups. Cardiomyofibre nuclear size in the 5HPO group decreased in size significantly compared to the control, VCO and 5HPO+VCO groups. Conclusion: VCO supplementation at a dose of 1.42 ml/kg showed protective effect on the aorta and heart of thermoxidized palm oil fed rats.

Keywords : aorta, heart, histomorphometric changes, thermoxidized palm oil, virgin coconut oil

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