

Effects of Virgin Palm Kernel Oil (VPKO) and Virgin Coconut Oil (VCO) on Immune and Oxidative Stress Biomarkers in Male Sprague Dawley Rats

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ABSTRACT

Palm kernel oil (PKO) is labelled “virgin” when extracted without chemical adulteration. As such, VPKO is hypothesized to retain more nutritional values since it resembles the physiological properties of the highly demanded VCO, but yet to be explored. Given that palm oil crop is more sustainable, VPKO could emerge as a cheaper and nutritional alternative of lauric oil to the costly VCO. This study compares the effects of 5% VPKO, VCO and refined, bleached, deodorized olive oil (RBDOO) on selected immune and oxidative stress biomarkers in healthy Sprague Dawley (SD) rats (n=16 per treatment) across 8 weeks. Sera were obtained for immunological analyses such as cluster of differentiation 4 (CD 4), cluster of differentiation 8 (CD 8), interleukin 6 (IL 6), tumor necrosis factor alpha (TNF- α) and C reactive protein (CRP); and biochemical analyses such as malondialdehyde (MDA), glutathione peroxidase (GSH-px) and superoxide dismutase (SOD) kits. Results were expressed in mean \pm standard error. Interestingly, we observe that CD 4 concentration was the lowest in rats fed with VPKO 3.87 ± 0.65 ng/mL ($p=0.001$). The level of CD 8 concentration in rats fed with VPKO 8.19 ± 0.23 ($p=0.001$) ng/mL was comparable to VCO fed rats and was lower than RBDOO fed rats. Lower T cell counts indicate suppressed inflammation. IL-6 and CRP concentration in rat fed with VPKO 10.79 ± 0.24 pg/mL and 122.17 ± 8.03 ng/mL were slightly higher than that of VCO fed rats but were lower than RBDOO fed rats. Eight weeks' fat feeding had no significant difference in weight gain across treatments. We postulate that VPKO could be a potential supplement as an alternative to VCO for relieving inflammation and enhancing body immune system.