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In vivo anti-hyperlipidemic activity of *Tetracarpidium conophorum* (African walnut) oil

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Hyperlipidemia, a disorder of lipid metabolism characterized by elevated levels of lipids circulating in the blood, has now become a global concern. It is considered as one of the five leading cause of death in the world. A total of 35 rats were used in this study. The animals were randomly assigned into seven groups (five rats per group). Group I (control group) was fed with normal diet (ND) only, Group II, V, VI and VII were fed with high cholesterol diet, while groups III and IV were fed with normal diet for five weeks and thereafter administered with 250 and 500 mg/kg body weight of *Tetracarpidium conophorum* oil (TCO), respectively for a period of 20 days. Group II were maintained on hyper cholesterol diet, while Group V and VI was administered 250 and 500 mg/kg body weight of TCO, respectively for a period of 20 days, while group VII was given 80 mg/kg body weight of atorvastatin used as a reference drug. After six weeks, rats were deprived of food overnight, the animals where sacrificed. Blood sample was collected and biochemically analyzed for total cholesterol (TC), triglyceride (TG), high density lipoprotein HDL cholesterol (HDL-C), low density lipoprotein (LDL-C), malondialdehyde levels (MDA), creatine kinase(CK) and lactate dehydrogenase (LDH) activities. The results showed that there were significant increases ($P<0.05$) in TC, LDL-C, CK, LDH and MDA levels with a reduction in HDL-C in rats induced with high cholesterol diet after 37 days when compared to the initial values at day 0. Oral administration of *Tetracarpidium conophorum* oil and atorvastatin drug for a period of 20 days resulted in significant lowering ($P<0.05$) of the levels of TC, LDL-C, CK, LDH and MDA levels with increase in HDL-C in rats induced with high cholesterol diet. However there were also significant decreases ($P<0.05$) in TC, LDL-C, LDH, CK and MDA levels with increase in HDL-C in rats administered with 250 and 500 mg/kg body weight of *Tetracarpidium conophorum* oil alone for 20 days in rats fed with normal diet when compared to control. *Tetracarpidium conophorum* oil could effectively reduce or control the amount of serum cholesterol and LDL-C. It is apparent that the oil could contribute to new formulation with significant hypolipidemic effect and cardioprotective properties.

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Effect of cold plasma on the characteristics of DPPC liposomes

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Recent progress in atmospheric plasmas has led to the creation of cold non-thermal atmospheric plasma (CAP). CAP is an ionized gas that has tremendous applications in biomedical engineering and is used as a possible therapy in dentistry and oncology. The aim of plasma interaction with tissue is not to denature the tissue, but rather to operate below the threshold of thermal damage and to induce chemically specific response or modification. Liposomes are used as models for artificial cells. This report therefore investigates the effect of cold plasma on 2-dipalmitoyl-sn-glycero-3-phosphocholine (DPPC) liposomes prepared by thin film hydration method which are used as a model for lipid bilayer membrane. DPPC liposomes were exposed to cold plasma for 2, 3 and 5 minutes, respectively. The effect of cold plasma on DPPC characterization parameters such as size, charge, FTIR absorption spectrum, UV spectrum and phase transition temperature were investigated. The present study revealed that CAP could alter the molecular structure for DPPC liposomes as depicted in the change in the FTIR absorption peaks at 3439 and 1687 cm-1. In addition, CAP affected the phase transitions for the DPPC by shifting it to higher temperatures. Moreover, CAP led to the increase of DPPC liposome size. 2 min exposure to CAP resulted in rapid coagulation of liposomes as depicted from the low zeta potential value was obtained. However, the UV absorption spectrum for DPPC liposomes was not altered by CAP exposure. Hence, this work highlighted that CAP can modify the physical and chemical characteristics of DPPC liposomes.

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