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**THE EFFECT OF GENISTEIN CONCENTRATED  
POLYSACCHARIDE (GCP) SUPPLEMENTATION ON OXIDATIVE  
DNA DAMAGE AND PLASMA TOTAL ANTIOXIDANT POTENTIAL  
IN OLD FEMALE SPRAGUE-DAWLEY RATS.**

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The anti-cardiovascular effect of estrogen replacement therapy in postmenopausal women is known to be associated with its role as an antioxidant, its ability to protect cells from DNA damage. Genistein concentrated polysaccharide (GCP) is a functional food produced by fermentation of soybean isoflavone extracts with *Basidiomycetes*, containing rich content of genistein aglycones. The aim of this study was to investigate the effect of GCP on oxidative DNA damage and plasma total antioxidant potential, comparing to the effect of estrogen. The 24 of 40 wk-old female Sprague-Dawley rats were divided evenly into three groups and fed experimental diet for 4 wk: control [high fat diet], estrogen [high fat diet + estradiol (200 g/kg diet)], and GCP group [high fat diet + GCP (0.8 g/kg diet)]. After the 4 wk experimental period, blood samples were collected to determine oxidative DNA damage represented by tail moment (TM) using single-cell gel electrophoresis (comet assay) and plasma total radical-trapping antioxidant potential (TRAP). Supplementation with GCP or estrogen resulted in a significant decrease in oxidative DNA damage in white blood cells (TM: 10.4 0.1 & 12.1 0.1) compared to control diet (13.0 0.1). The protective effect of GCP diet against DNA damage was more effective than that of estrogen diet. The plasma TRAP was significantly elevated in GCP group compared to those in control or estrogen group. The plasma TRAP level was negatively correlated with the oxidative DNA damage expressed by tail moment ( $r = -0.382$ ,  $P = 0.03$ ). In conclusion, the

GCP at the level of 0.8 g/kg diet, compared to estrogen acts as antioxidant and thus protects against DNA damage more effectively in perimenopausal rats. This result suggests that GCP, fermented soybean isoflavone extracts, could be administered as a potential estrogen replacement to reduce cardiovascular risk in postmenopausal women.