

## **Potential of mixed tocotrienol supplementation to reduce cholesterol and cytokines level in adults with metabolic syndrome**

### **ABSTRACT**

Introduction: Metabolic syndrome is associated with low-grade, chronic inflammation. Our study aimed to evaluate the effects of tocotrienols supplementation on cytokines and lipid profile in adults with metabolic syndrome. Methods: In a 16-week randomised, double-blind, placebo-controlled trial, 70 adults with metabolic syndrome aged 20-60 years were randomly assigned to a mixed tocotrienols group (n=35) that received 400mg/day of mixed tocotrienols or a placebo group (n=35) that received capsules containing soy bean oil. At baseline, week 8 and week 16, anthropometric, body composition and blood pressure measurements were conducted. At baseline and week 16 only, serum levels of total cholesterol (TC) and high density lipoprotein (HDL)-cholesterol, plasma levels of fasting plasma glucose (FPG), interleukin-6 (IL-6), tumour necrosis factor- $\alpha$  (TNF- $\alpha$ ), leptin, adiponectin and high sensitivity C-reactive protein were also determined. Changes in dietary intake and physical activity level between baseline, week 8 and week 16 were also assessed. Results: In the tocotrienols group, significant reductions from baseline were found in diastolic blood pressure (p=0.001), TC (p=0.008), LDL-cholesterol (p=0.022), HDL-cholesterol (p<0.001), IL-6 (p=0.024) and TNF- $\alpha$  (p=0.013) at week sixteen. However, the changes in the tocotrienols group were not significantly different from those of the placebo group. Conclusion: The 16-week mixed tocotrienols supplementation exerted potential beneficial effects on cytokines and lipid profile in adults with metabolic syndrome. The results might have been confounded by the physiological effects produced by the soy bean oil in the placebo capsule.

**Keyword:** Chronic inflammation; Cytokines; Lipid profile; Metabolic syndrome; Tocotrienols