

Effect of palm-based tocotrienols and tocopherol mixture supplementation on platelet aggregation in subjects with metabolic syndrome: a randomised controlled trial

ABSTRACT

Tocotrienols, the unsaturated form of vitamin E, were reported to modulate platelet aggregation and thrombotic mechanisms in pre-clinical studies. Using a Food and Drug Administration (FDA)-approved cartridge-based measurement system, a randomised, double-blind, crossover and placebo-controlled trial involving 32 metabolic syndrome adults was conducted to investigate the effect of palm-based tocotrienols and tocopherol (PTT) mixture supplementation on platelet aggregation reactivity. The participants were supplemented with 200 mg (69% tocotrienols and 31% α -tocopherol) twice daily of PTT mixture or placebo capsules for 14 days in a random order. After 14 days, each intervention was accompanied by a postprandial study, in which participants consumed 200 mg PTT mixture or placebo capsule after a meal. Blood samples were collected on day 0, day 14 and during postprandial for the measurement of platelet aggregation reactivity. Subjects went through a 15-day washout period before commencement of subsequent intervention. Fasting platelet aggregation reactivity stimulated with adenosine diphosphate (ADP) did not show substantial changes after supplementation with PTT mixture compared to placebo ($p = 0.393$). Concomitantly, changes in postprandial platelet aggregation reactivity remained similar between PTT mixture and placebo interventions ($p = 0.408$). The results of this study highlight the lack of inhibitory effect on platelet aggregation after short-term supplementation of PTT mixture in participants with metabolic syndrome.

Keyword: Palm-based tocotrienols; Tocopherol; Vitamin E; Platelet; Metabolic syndrome