

### Abstract

Metabolic syndrome (MetS) is a cluster of metabolic abnormalities. Prevalence of MetS is documented at 50% and 87.5% in Africa and Kenya respectively. It is managed by combining lifestyle modification and pharmacotherapy. Although *Camellia sinensis* TRFK306 has been proven to induce weight loss in mice and humans, its effect on metabolic syndrome is yet to be investigated. This study aimed to investigate the effect of *Camellia sinensis* TRFK306 extract on MetS induced Sprague Dawley male rats. A total of thirty-five, six-weeks-old rats were acclimatized for one (1) week and randomized into 5 groups (n=7). Metabolic syndrome was induced using high-fat fructose diet for eight (8) weeks. Post-hoc statistical analysis using Tukey's multiple comparison test was used to analyze the effect of freeze-dried extracts of *Camellia Sinensis* TRFK306 on various markers of metabolic syndrome. Random blood sugar levels revealed significant differences ( $p = <0.0001$ ), for experimental animals. Oral glucose tolerance results were significant ( $p = <0.0001$ ). Total serum triglyceride levels was significant ( $p = <0.0001$ ). Mean serum HDL-C levels revealed significant differences between the normal control and negative control ( $p = 0.0009$ ), the negative control and low dose test ( $p = 0.0023$ ), the negative control and high dose test ( $p = 0.0025$ ) and the negative control and positive control ( $p = 0.0014$ ). The mean serum LDL-C levels revealed significant difference ( $p = <0.0001$ ). *Camellia Sinensis* TRFK306 possessed significant beneficial effects on various markers of metabolic syndrome.