

Investigation of the curative effects of palm vitamin E tocotrienols on autoimmune arthritis disease in vivo

ABSTRACT

The tocotrienol-rich fraction (TRF) from palm oil contains vitamin E, which possesses potent antioxidant and anti-inflammatory activities. Rheumatoid arthritis (RA) is a chronic joint inflammatory disease characterised by severe joint pain, cartilage destruction, and bone erosion owing to the effects of various pro-inflammatory mediators and cytokines. Here, we investigated the therapeutic effects of TRF in a rat model of collagen-induced arthritis (CIA). Arthritis was induced by a single intradermal injection of collagen type II in Dark Agouti (DA) rats. Rats were then treated with or without TRF by oral gavage from day 28 after the first collagen injection. Arthritic rats supplemented with TRF showed decreased articular index scores, ankle circumferences, paw volumes, and radiographic scores when compared with untreated rats. The untreated arthritic rats showed higher plasma C-reactive protein levels ($p < 0.05$) and production of pro-inflammatory cytokines than arthritic rats fed TRF. Moreover, there was a marked reduction in the severity of histopathological changes observed in arthritic rats treated with TRF compared with that in untreated arthritic rats. Overall, the results show that TRF had beneficial effects in this rat model of RA.