

# **Palm Tocotrienol-rich Fraction Improves Wound Healing by Modulating Collagen and Decreasing Reactive Oxygen Species**

Zaizuhana Shahrim, Kanga Rani Selvaduray and [Kalanithi Nesaretnam](#)

Malaysian Palm Oil Board, No 6, Persiaran Institusi, Bandar Baru Bangi, 43300 Kajang,  
Selangor, Malaysia

Email: [zaizuhana@mpob.gov.my](mailto:zaizuhana@mpob.gov.my)

Wound healing consists of an orderly progression of events that re-establish the integrity of the damaged tissue. Several natural products have been shown to accelerate the healing process. The present investigation was undertaken to determine the role of palm tocotrienol-rich fraction (TRF) on changes in collagen characteristics and antioxidant property during cutaneous wound healing in Sprague Dawley rats. Full thickness excision wounds were made on the back of rat and 300 mg/kg body weight of TRF was administered orally. The wound tissues removed on 3<sup>rd</sup>, 7<sup>th</sup>, 14<sup>th</sup> and 21 days (post-wound) were used to analyse biochemical and pathological changes. TRF increased cellular proliferation and collagen synthesis at the wound site, as evidence by increase in total protein and collagen content in wound tissues. TRF treated wounds were found to heal much faster as indicated by improved rates of epithelialisation and wound contraction, which were also confirmed by histopathological examinations. TRF treatment was shown to decrease the levels of lipid peroxides (LPs), while the level of superoxidase dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), and activities were significantly increased exhibiting the antioxidant properties of TRF in accelerating wound healing. The results clearly substantiate the beneficial effects of orally administration of TRF in the acceleration of wound healing and its antioxidant effects.

**Keywords:** Wound healing, antioxidant, tocotrienol-rich fraction, reactive oxygen species