

## Micro-CT Assessment of Fracture Healing with Targeted Delivery of Tocotrienol in Osteoporosis Model

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**Abstract :** Studies have shown that oral tocotrienol, a potent vitamin E, promoted fracture healing of osteoporotic bone. In this study, tocotrienol was combined with a polymer carrier (PLGA), and injected to the fracture site. The slow and constant release of tocotrienol particles would promote fracture healing of post-menopausal osteoporosis rat model. Fracture healing was assessed using micro-CT. Twenty-four Sprague-Dawley rats were ovariectomised or sham-operated and the left tibiae were fractured and fixed with plate and screws. The fractures were created at the upper third of the left tibiae. The rats were divided into 3 groups: sham-operated (SO), ovariectomised-control (OVxC) and PLGA-incorporated tocotrienol treatment (OVx + TT) groups. After 4 weeks, the OVx + TT group showed significantly better callus fracture healing than the OVxC group. In conclusion, tocotrienol-incorporated PLGA was able to promote fracture healing of osteoporotic bone.

**Keywords :** osteoporosis, micro-CT, tocotrienol, PLGA, fracture

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