

## **Efficacy of carbazole alkaloids, essential oil and extract of *murraya koenigii* in enhancing subcutaneous wound healing in rats**

### **Abstract**

The traditional use of *Murraya koenigii* as Asian folk medicine prompted us to investigate its wound healing ability. Three carbazole alkaloids (mahanine (1), mahanimbicine (2), mahanimbine (3)), essential oil and ethanol extract of *Murraya koenigii* were investigated for their efficacy in healing subcutaneous wounds. Topical application of the three alkaloids, essential oil and crude extract on 8 mm wounds created on the dorsal skin of rats was monitored for 18 days. Wound contraction rate and epithelialization duration were calculated, while wound granulation and collagen deposition were evaluated via histological method. Wound contraction rates were obvious by day 4 for the group treated with extract (19.25%) and the group treated with mahanimbicine (2) (12.60%), while complete epithelialization was achieved on day 18 for all treatment groups. Wounds treated with mahanimbicine (2) (88.54%) and extract of *M. koenigii* (91.78%) showed the highest rate of collagen deposition with well-organized collagen bands, formation of fibroblasts, hair follicle buds and with reduced inflammatory cells compared to wounds treated with mahanine (1), mahanimbine (3) and essential oil. The study revealed the potential of mahanimbicine (2) and crude extract of *M. koenigii* in facilitation and acceleration of wound healing.