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Biochemical investigation of the fracture healing properties of *Marantodes pumilum var. alata* in postmenopausal osteoporotic rats

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This study aims to investigate, in ovariectomized rats, the changes in bone biochemical markers induced by Marantodes *pumilum var. alata* (MPva) leaf extract in an attempt to further evaluate its fracture-healing property. 30 healthy female Sprague-Dawley rats were sorted into five groups (n=6) namely: sham-operated (SO), ovariectomized control (OC), estrogen treatment (ET), 20 mg leaf treatment (MP20) and 100 mg leaf treatment groups (MP100). All rats, except the SO group, were ovariectomized to induce a state of menopause. Eight weeks post-ovariectomy, the right tibiae of rats were fractured and fixed with titanium plates. For another eight weeks, after osteotomy, the ET group was treated with 64.5 µg/kg/d estrogen (Premarin®) while the MP20 and MP100 groups were treated with 20 mg and 100 mg/kg/d oral doses of MPva leaf extract, respectively. Before and after treatment, blood sample was collected from rats for assay of inflammatory markers while, after treatment, fractured tibiae were harvested from euthanized rats for assay of bone turnover and anti-oxidant markers using ELISA. At $p<0.05$, results were considered significant. Serum level of osteocalcin was significantly elevated ($p<0.05$) in MPv100 group while pyridinoline level was significantly elevated in all treatment groups as well as the OC. Post-treatment serum levels of IL-6 were significantly higher in MPv20 and MPv100 while TNF-alpha was significantly higher in MPv100 group compared to pre-treatment levels ($p<0.05$). Levels of GPx and SOD in tibia were significantly elevated ($p<0.05$) in both MPv20 and MPv100. Results obtained revealed that the bone-repair effects of MPva leaves could be exerted by its ability to enhance bone re-modeling activities due to its anti-oxidant and inflammation modulatory properties.

Biography

Tijjani R G is a PhD Student/Graduate Research Assistant under the supervision of Prof. Dr. Norazlina Mohamed in the Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM), Kuala Lumpur. He is currently working on natural remedies for the management of osteoporosis in postmenopausal condition. He has published more than 10 papers in reputed journals.

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