

## **THE INFLUENCE OF MANGIFERIN ON IMPAIRED RESPIRATION IN EXPERIMENTAL DIABETES**

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Diabetes is underlain by enhanced oxidative stress, inflammation, and chronic tissue hypoxia. In this study we investigated potential benefits of using the natural polyphenolic compound mangiferin, an extract from the Mango plant, in streptozotocin-induced diabetes in the rat. The study encompassed the effects of mangiferin on ventilation and its hypoxic responses, measured in a body plethysmograph in conscious rats, and on the plasma level of proinflammatory cytokines in vitro. Mangiferin was given as a 40 mg/kg bolus, followed by 20 mg/kg, i.p. for 13 days. The major findings are that mangiferin reversed the diabetic-evoked impairment of the hypoxic ventilatory responses to 8% and 12% O<sub>2</sub> in N<sub>2</sub>, improved arterial blood oxygenation and glucose control, as well as significantly decreased the level of interleukin 6 (IL-6) and tumor necrosis factor alpha (TNF- $\alpha$ ). We conclude that mangiferin holds a potential to ameliorate the pathological sequelae of diabetes by revitalizing the respiratory hypoxic reactivity, which helps reduce the chronic hypoxic burden, and thus improves tissue oxygenation. In addition, mangiferin has a clear anti-inflammatory capacity, likely underlain by its antioxidant properties. Mangiferin thus holds a potential of an ancillary natural antidiabetic compound that may help control the disease.