

THE INFLUENCE OF MANGIFERIN ON IMPAIRED RESPIRATION IN EXPERIMENTAL DIABETES

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The aim of the study was to determine if mangiferin, a bioactive polyphenol, can prevent respiratory suppression developing in rats with streptozotocin-induced diabetes. A secondary objective was to study the antioxidative capacity of mangiferin as assessed from its influence on plasma lipid peroxidation. Respiration and its responses to hypoxic hypoxia (8% and 12% O₂) and hyperoxic hypercapnia (4% and 8% CO₂) were investigated in a whole body plethysmograph in four groups of conscious rats: healthy untreated control, healthy mangiferin-treated for two weeks, diabetic untreated for a month, and diabetic treated for 2 weeks with mangiferin (40 mg/kg, followed by 20 mg/kg, i.p. for 13 days). The level of lipid peroxidation was evaluated by the TBARS method. The findings are that mangiferin reduced the ventilatory responses to chemical stimuli in healthy rats. However, in diabetic rats whose respiration was already suppressed, mangiferin improved the ventilatory responses, bringing them back nearly to the pre-diabetic level. Mangiferin treatment also caused a reversion of the enhanced lipid peroxidation found in diabetic rats. In conclusion, mangiferin restrains ill effects of diabetes on respiratory reactivity, which may result in improved tissue oxygenation. The beneficial effects of mangiferin may have to do with its antioxidant properties.