

INFLUENCE OF MANGIFERIN ON LIPID PEROXIDATION

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Mangiferin is a polyphenolic compound used in the traditional South American and Indian medicine as a panaceum with broad antibacterial, antitumor, antidiabetic, and antiviral activities. The main source of mangiferin is the bark and leaves of Mango trees (*Mangifera indica* L.). Several studies point to the possible antioxidant properties of mangiferin, as the underpinning element of its action, but these mechanisms are not yet fully clear. Therefore, the purpose of our experiments was to get further insight into the antioxidant capacity of mangiferin. We used the ThioBarbituric Acid Reactive Substances (TBARS) assay, an index of lipid peroxidation and oxidative stress according to the model by Ernster and Nordenbrand (Methods Enzymol. 10: 574-580, 1967). There were two separate sets of experiments. In one, the TBARS concentration was assayed in *in vitro* rat serum; mangiferin was added in increasing concentrations of 50, 150, and 300 $\mu\text{mol/l}$. The other set was performed *in vivo* and was subdivided into two parts. In one, mangiferin was administered *i.p.* in increasing bolus doses of 50, 150, and 300 mg/kg and the TBARS concentration in rat serum was assayed on the dose. In the other part, mangiferin was given but in one dose of 300 mg/kg and the TBARS concentration was assayed on the time elapsing after the injection of mangiferin, after 1, 7, and 14 days. We found that the antioxidant capacity in *in vitro* rat serum was increasing with increasing mangiferin concentration; TBARS 1.98 vs. 1.43 $\mu\text{mol/l}$ in the untreated control vs. 300 $\mu\text{mol/l}$; $P < 0.001$. The antioxidant effect of mangiferin injected *in vivo* was akin, and even expressed stronger, to that above outlined; the decrease in TBARS concentration was by 38% at 300 mg/kg mangiferin; $P < 0.001$. When TBARS were plotted on time after mangiferin injection, its decrease was the strongest at Day 1, persisted till Day 7 ($P < 0.01$), waning afterwards. We conclude that mangiferin conspicuously increases the serum antioxidant capacity, as judged from decreased lipid peroxidation in otherwise unaffected healthy rats. Mangiferin's antioxidation may underpin its broad bioactivity.