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Extract of the seed coat of *Tamarindus indica* inhibits nitric oxide production by murine macrophages in vitro and in vivo

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Abstract

The seed coat extract of *Tamarindus indica*, a polyphenolic flavonoid, has been shown to have antioxidant properties. The present studies investigated the inhibitory effect of the seed coat extract of *T. indica* on nitric oxide production in vitro using a murine macrophage-like cell line, RAW 264.7, and in vitro and in vivo using freshly isolated B6C3F1 mouse peritoneal macrophages. In vitro exposure of RAW 264.7 cells or peritoneal macrophages to 0.2–200 µg/mL of *T. indica* extract significantly attenuated (as much as 68%) nitric oxide production induced by lipopolysaccharide (LPS) and interferon gamma (IFN-γ) in a concentration-dependent manner. In vivo administration of *T. indica* extract (100–500 mg/kg) to B6C3F1 mice dose-dependently suppressed TPA, LPS and/or IFN-γ induced production of nitric oxide in isolated mouse peritoneal macrophages in the absence of any effect on body weight. Exposure to *T. indica* extract had no effect on cell viability as assessed by the MTT assay. In B6C3F1 mice, preliminary safety studies demonstrated a decrease in body weight at only the highest dose tested (1000 mg/kg) without alterations in hematology, serum chemistry or selected organ weights or effects on NK cell activity. A significant decrease in body weight was observed in BALB/c mice exposed to concentrations of extract of 250 mg/kg or higher. Oral exposure of BALB/c mice to *T. indica* extract did not modulate the development of T cell-mediated sensitization to DNFB or HCA as measured by the local lymph node assay, or dermal irritation to nonanoic acid or DNFB. These studies suggest that in mice, *T. indica* extract at concentrations up to 500 mg/kg may modulate nitric oxide production in the absence of overt acute toxicity.

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