

Metabolic and immunologic alterations of ginger rhizome among streptozotocin-nicotinamide induced diabetic rats

ABSTRACT

Introduction: This study was conducted to determine immunological and metabolic effects of different concentrations of ginger rhizome (*Zingiber officinale* Roscoe) in streptozotocin (STZ)-nicotinamide (NA) induced diabetic rats. **Methods:** Forty-eight fasted male Sprague-Dawley rats were induced diabetes using a single intraperitoneal injection of NA(110 mg/kg b.w.) and STZ (65 mg/kg b.w, 15 min after NA). Diabetic rats orally received either different concentrations (250, 500 and 750 mg/kg body weight) of ginger rhizome suspension or glibenclamide (10 mg/kg body weight) for 6 weeks. Two control diabetic and normal groups were gavaged with only distilled water as a vehicle. **Results:** The results indicated that the lower concentrations of ginger modulated body weight, fasting blood glucose, level of triglyceride and tumor necrosis factor- α (TNF- α) ($p < 0.05$). In contrast, ginger could not enhance atherogenic indices due to a decline in the level of HDL-c. Immunological features of ginger were evident by a significant lymphocyte proliferation in all treated groups at stimulation by 5 mg/ml PHA ($p < 0.001$). Level of CD45ra+ (B cell marker) increased significantly in the lowest dose of ginger ($p < 0.05$, 58%), and 250 mg/kg body weight of ginger was found to be safe for not altering the level of CD4+CD25+ marker ($p > 0.05$). **Conclusion:** Ginger indicated better impact on metabolic and immunologic parameters in lower doses of supplementation compared with high doses of treatment.

Keyword: Diabetes; Ginger; Inflammation; Lymphocytes; Streptozotocin-nicotin-amide diabetic rats