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Effects of Turmeric (Curcuma longa) Extract in streptozocin-induced diabetic model

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Abstract

Herbal remedies have been used for centuries to ameliorate complications of diabetes mellitus (DM). The aim of this study is to compare the effects of the oral curcumin supplement versus parenteral administration of turmeric extract on diabetic complications in a streptozocin (STZ) diabetic model. STZ DM rats received low and high doses turmeric extract intraperitoneally as well as oral curcumin. Curcumin and turmeric extracts significantly reduced blood glucose and creatinine levels, but not urea, and caused an increase in uric acid. Low dose improved liver enzymes, while higher dose and oral administration caused an increase in the ALT and AST. All groups showed an improvement in the serum cholesterol, while the triglycerides were not improved in the high and oral treatment. Histological evaluation showed islet cell protection. High-dose injection showed almost intact renal corpuscles as well as tubular structures with minimal degeneration. Treatment showed limited protection of Liver tissue. PRACTICAL APPLICATION: Curcumin has been heavily marketed as a protective agent. The current study shows some potential risk of curcumin use. Oral and injectable curcumin should be used with caution. Turmeric extract and oral curcumin supplement showed protective effects on pancreatic, and renal structure and function. Although both did show some improvement in liver function, higher doses caused disturbance in liver enzymes and did not show histological evidence of liver tissue protection.

Keywords: diabetes mellitus; diabetic complications; diabetic model; oral curcumin; streptozocin; turmeric.

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