



Hypoglycemic, hypolipidaemic and antioxidant activities of the Siddha medicinal preparation *Mathumeha chooranam* on patients with Type II Diabetes Mellitus

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Abstract

The objective of this study was to determine the hypoglycemic, hypolipidaemic and antioxidant activity of the Siddha Medical preparation *Mathumeha chooranam* (MMC) which consists of *Terminalia chebula*, *Phyllanthus emblica*, *Murraya koenigii*, and *Gymnema lactiferum*. A clinical trial was conducted in 193 type II diabetes mellitus patients with age ranging from 40 to 70 years and fasting plasma glucose (FPG) above 140 mg/dL. Fasting plasma glucose, glycosylated haemoglobin, lipid profile, renal and liver function tests and serum antioxidant capacity were estimated at the commencement and at the end of 90 days of trial. The study consisted of 115 males and 78 females. Data analysis was done using IBM Statistics SPSS version 20. Paired t-test revealed highly significant mean reduction by  $35.7 \pm 15.2$  % from  $197.1 \pm 64.5$  to  $117.9 \pm 10.9$  mg/dL in fasting plasma glucose (FPG) which ranged from 17.4 to 347.2 mg/dL. The glycated haemoglobin (HbA1c) decreased from  $7.54 \pm 1.35$  to  $6.03 \pm 0.66$  % with a mean decline of  $18.7 \pm 9.4$  %. After treatment, 22 (11.4%) subjects became normoglycaemic (FPG < 110 mg/dL) 150 (77.7%) showed impaired fasting glucose (IFG) (FPG between 110 to < 126 mg/dL) and 21 remained as diabetics. According to the HbA1c grouping, 78, 61 and 54 patients were in the normal, borderline and diabetic groups respectively. Using both IFG and HbA1c categories, 16 patients (8.3 %) were identified as normal, 49 (25.4%) as borderline and 11 (5.7%) as diabetic. As a result of treatment with MMC, highly significant reduction in total cholesterol ( $12.3 \pm 9.4$ %), triglycerides ( $13.3 \pm 11.7$ %) and LDL cholesterol ( $10.6 \pm 9.5$ %) and significant increase in HDL cholesterol ( $16.3 \pm 18.3$ %), were observed. At base line 60 (31.1%) patients had desirable (< 200 mg/dL) level of cholesterol, 84 (43.5%) patients were with borderline high (200 - < 240 mg/dL) cholesterol and 49 (25.4%) were having high ( $\geq 240$  mg/dL) cholesterol. After treatment there were 128, 52 and 13 patients with desirable, borderline high and high cholesterol respectively. The hypocholesterolaemic effect of MMC is comparable or even better than the efficacies of herbs investigated so far. The AST, ALT and ALP activities in serum were significantly reduced after treatment and were within the normal ranges indicating that the liver functions are not affected. Serum total antioxidant capacity significantly increased after 90 days of administering 5 g of MMC per day which contained  $2.74 \pm 0.104$  mmol/g of total antioxidant capacity. Serum creatinine level significantly decreased in treated diabetic mellitus patients. The mean value after treatment is at the lower end of the values reported in various studies for healthy controls. There is no indication that the kidney functions are impaired in the diabetic patients and MMC has a protective role. The results suggest that MMC is an effective and harmless poly herbal preparation with potential beneficial role in treatment of type II diabetes mellitus.

**KEYWORDS:** Antioxidant activity, Diabetes mellitus, *Mathumeha Chooranam*, *Mathumeham*, Siddha Medicine

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