
Effect of Rifampicin on *Trigonella Foenum Graecum* (Fenugreek)-Induced Hypoglycemia in Rats

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Albino male rats were made diabetic by alloxan and maintained on standard diet (control) were administered fenugreek seed powder (2 g/kg) and fenugreek seed mixed with rifampicin (10 mg/kg) orally. Blood samples were collected in fluoride vials through cardiac puncture under ketamine anaesthesia. Sugar estimation was done by Dubowski's technique. Observations reveal that fenugreek seeds produced significant ($P < 0.01$) hypoglycemic effect but on concurrent administration of rifampicin, fenugreek seeds became ineffective.

TRIGONELLA foenum - graecum (family - papilionaceae) commonly known as methi, is cultivated throughout India¹. Fenugreek seed contains an alkaloid trigonelline, diosgenin, essential oil, crude protein, mineral constituents such as iron, phosphorus, sodium, potassium and magnesium. Pyridoxine, cyanocobalamine, biotin, vitamin-c, lysine, histidine, arginine, cystine, tyrosine and tryptophan were reported to present in germinating seeds²⁻⁴. The powdered seeds are used as emmenagogue, diuretic, aphrodisiac, antidiabetic and useful in rheumatism, enlargement of liver and spleen⁵⁻⁷.

The frequent association of pulmonary tuberculosis with diabetic mellitus possess problems with therapeutic options in clinical medicine. The present study was therefore, initiated to investigate the effect of an antitubercular drug, rifampicin on fenugreek seed-induced hypoglycemia.

The seeds of fenugreek was purchased from local herbal shop and confirmed in Siddha research unit, AVVM pushpam College, Poondi, Tamilnadu. Well dried seeds were pulverised to get fine powder and passed through 120 mesh to remove the coarse materials from the fine powder. Male albino rats of body weight ranging from 140

to 170 g, supplied by King Institute, Guindy, Chennai, were housed individually at normal ambient temperature, fed with pelleted diet and water (*ad libitum*) and were used throughout the study. They were administered fenugreek seed powder mixed with the diet daily at a dose of 2 g/kg or a dose of fenugreek seed powder (2 g/kg) mixed with rifampicin (10 mg/kg).

Forty eight rats were divided into two groups (A and B) of 24 rats each. Group-A was further divided into 3 subgroups (A₁ to A₃) consisting of 8 animals each. Diabetes was induced in group B animals by a single intraperitoneal injection of 140 mg/kg of alloxan monohydrate in normal saline. Rats which showed blood glucose levels higher than three times the normal 3 days after injection of alloxan were included in the study. The diabetic rats thus selected were also divided into three groups (B₁ to B₃) of 8 animals each. Rats in subgroups A₁ and B₁ served as control. Fenugreek seed powder was administered at a dose of 2 g/kg to groups A₂ and B₂ and fenugreek seeds 2g/kg mixed with rifampicin 10 mg/kg to groups A₃ and B₃.

After an overnight fast, under ketamine anaesthesia (50 mg/kg i.m.), samples of blood were withdrawn through cardiac puncture. The blood samples were collected before and after one or two weeks of administration of fenugreek seed powder. Blood glucose levels were

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TABLE-1
BLOOD GLUCOSE LEVEL IN NORMAL AND DIABETIC RATS

Group	Treatment		Blood glucose (mg %)		
	Fenugreek seeds powder g/kg	Rifampicin mg/kg	before Treatment	After treatment 1 week	2 weeks
Normal					
A ₁	Control	Control	62.4 ± 3.15	62.0 ± 2.17	62.0 ± 2.06
A ₂	2	-	65.4 ± 2.62	60.4 ± 2.49	55.2 ± 0.17
A ₃	2	10	66.4 ± 4.66	69.8 ± 3.48	70.8 ± 0.68
Diabetic					
B ₁	Control	Control	217.0 ± 8.26	216.4 ± 8.26	219.6 ± 7.11
B ₂	2	-	250.0 ± 5.66	236.0 ± 2.60	217.0 ± 2.33*
B ₃	2	10	240.0 ± 11.01	238.6 ± 10.20	242.4 ± 11.24

Each Blood glucose value is expressed as mean mg % levels with Standard error of mean of 8 determinations. Asterisks indicate significant difference at $P \leq 0.01$ from pretreatment level.

estimated using the Dubowski's method⁸. All the results were statistically analysed using students "t" test⁹.

Blood glucose level decreased significantly both in normal and diabetic rat following fenugreek seed powder administration. The hypoglycemic effect was more pronounced in the groups A2 and B2 (Table-1). The hypoglycemic effect of fenugreek previously has been shown in normal rats¹⁰ and nondiabetic man¹¹. This appears to be due to the presence of high dietary fibre content¹². However the fenugreek seed powder became ineffective in both normal and diabetic rats on concurrent administration of rifampicin. This could perhaps be due to the induction of hepatic microsomal enzymes¹³ by rifampicin. This observation suggests that caution may be applied while using rifampicin in diabetic patients.

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