

INDIGENOUS DRUGS IN THE TREATMENT OF DIABETES MELLITUS

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The symptoms of diabetes mellitus are recorded in the Indian medical compendia—Charaka Samhita and Sushruta Samhita. Herbal and mineral preparations useful in the management of diabetes have been mentioned in Indian Materia Medica.

Nagarajan et al have compiled a list of 75 Indian plants known to have hypoglycemic activity¹.

This review updates the studies on indigenous antidiabetic drugs being carried out in India during the last two years.

Trigonella foenum graecum (Fenugreek)

The seeds of fenugreek, a condiment grown in India have been used in the treatment of diabetes mellitus, both to suppress glycosuria in mild diabetes and to improve severe diabetes. Mention of fenugreek seeds has been made in Ayurvedic literature, Greek and Latin pharmacopeas also.

At the National Institute of Nutrition, Hyderabad, controlled trials were carried out on the glucose lowering effect of fenugreek in normal and in diabetic subjects². When administered in a dose of 25gm, fenugreek seeds prevented the elevation of blood glucose in normal subjects following a glucose load. Serum insulin levels were also similarly altered. The leaf of fenugreek however, did not exhibit a similar property. The discrepancy is probably due to the presence of gum in the seeds which is not destroyed during cooking.

Similar effects were observed when fenugreek was added to *chapati* or *dal*, or when taken as a drink before meals. Thus fenugreek can be used in a variety of ways without its losing the antidiabetic property.

To study the effect of fenugreek in diabetics, 25gm of fenugreek seeds were given per day for 21 days. The blood sugar came down from 180 mg/dl on the first day to 100 mg/dl on day 10, to 95 mg/dl on day 20. Glycosuria also decreased from 30 gm/24 hours (day 1) to 18 gm/24 hours (day 10) to 8 gm/24 hours (day 20). The daily insulin requirement fell by 50% in two insulin dependent diabetics. Symptoms of glycosuria, viz polyuria, polydipsia and polyphagia, also improved.

There were no significant side effects; two patients had abdominal bloating upon the ingestion of the seeds. It was relieved in a few days of continued use.

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The debitterized seeds of fenugreek are effective in lowering blood glucose and cholesterol levels.

Syzygium cumini, Pterocarpus marsupium, Curcuma longa and Emblica officinalis

Under the auspices of Indian Council of Medical Research, a multicentric project is under way to evaluate the efficacy of three Ayurvedic antidiabetic preparations (*Syzygium cumini*, *Pterocarpus marsupium* and equal amounts of *Curcuma longa* and *Emblica officinalis*). The effect of these three preparations is being compared with Rastinon (chlorpropamide) in the treatment of newly diagnosed non-insulin dependent diabetes mellitus (NIDDM) patients.

Subjects would be recruited in each centre for the study (*Jamun*—*Szygium cumini* at St Johns Medical College Bangalore, *Vijayasar*—*Pterocarpus marsupium* at AIIMS, New Delhi, *Nishamalak*—comprising equal parts of *Curcuma longa* and *Emblica officinalis*, at Madras Medical College, Madras, and Seth GS Medical College (Bombay).

Criteria for admission into the trial are : (a) newly diagnosed NIDDM (b) age between 35 and 60 years (c) willingness to comply with the protocol of the trial. Contraindications for entry are : (a) presence of significant nephropathy, retinopathy or cardiovascular involvement (b) body mass index less than 19 (c) pregnancy (d) lactation.

Patients are first put on diet therapy for a month, and only those would be taken into the trial whose blood sugars exceed 120 mg/dl despite dietary restrictions. *Jamun* / *Vijayasar* are used as 250 mg capsules (2 capsules each in the morning and evening, for one year). Rastinon (250mg) is given in an identical schedule. The duration of the trial is for one year. The Institute of Statistics, Madras, is monitoring the overall conduct of the trial.

(3) *Azadirachta indica* (neem oil)

Neem oil has been found to have antihyperglycemic actions in experimental animals^{3,4}.

Eighty five diabetics aged over 35 years participated in a trial of neem oil in the treatment of diabetes⁵. Since it is bitter, neem oil was given in gelatin capsules, in a dose of 5 to 10 drops each day in two doses. Dietary control comprised of restricting pure sugars.

There was a significant fall in both fasting and postprandial blood sugars following the use of neem oil (Table 1). The requirement of insulin or oral antidiabetic agents fell by 25 to 50%.

Table 1

	Blood glucose (mg/dl)	
	Fasting	Post prandial
Before treatment	168	263
One month after treatment	96	165
Two months ,, ,,	95.5	168
Three months ,, ,,	85.6	173.7

Neem oil consists of sulphur (0.427%), bitter alkaloids (quinine and chinichorine), resins, glycosides and fatty acids⁵. Its antihyperglycemic action has been attributed to increased peripheral glucose utilization, enhanced insulin release and decreased glucose reabsorption at the proximal tubules⁴.

Conclusion

This review summarises the current status of indigenous hypoglycemic agents from India, reported after the last update on indigenous drugs in the Bulletin. The preliminary studies need to be extended and carried out with care, in human beings, under controlled conditions. Scientific rigour is essential, both to establish that the preparations are effective and safe, and, equally important, that potentially useful preparations are not lost in the haystack of poor experimental design.

References

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