

Siddha in Herbal Therapeutics

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ABSTRACT

Every day, millions of us look to herbal therapeutics to support everything from bone strength to immune health. India is the largest producer of medicinal herbs and is called a Botanical garden of the world. The Therapeutics of siddha medicines consist of mainly metals and minerals and herbs. The materia medica of the siddha system treasures a collection of information regarding plant, animal and mineral matter which had been experimented and re-examined over several thousands of years. The tradition of siddha vaidya is the oldest documented medical science in the world with several hundreds of formulations and active pharmacological information and knowledge of treating various ailments. Herbal formulations being widely accepted therapeutic agents as anti diabetics, anti arthritis, hepato protectives, cough remedies and memory enhancers. The current review focuses on herbal drug preparations and plants used in the treatment of mathumegam (Diabetes mellitus) a major health problem in the world.

Keywords: Siddha System, Diabetes mellitus, Herbal therapy.

INTRODUCTION

India is now the country with the most diabetic people, and Indian migrants in many parts of the world have a higher frequency of diabetes than the indigenous population has. There has been a progressive rise in the prevalence of Diabetes in India since the 1970, with increases from about 2% to 12% in urban populations. In many regions Diabetes is more common in urban than in rural population. social deprivation, unemployment and poverty in city dwellers may coreggregate with diabetogenic life style factors such as decreased physical activity, westernized diet and obesity. Ethnic groups with an underlying genetic predisposition are selected first. The WHO projects that by 2030 more than half of diabetes suffers in the world will live in Asia and people with diabetes is to increase 366 million by 2030. In siddha system of medicine the disease mathumegam is compared with the Type II Diabetes mellitus. Mathumegam is characterized by increased and frequent passing of urine, which is sweet in odour, resulting in gradual deterioration of seven physical constituents. The role of medicinal plants in ameliorating the problem of diabetes is noteworthy because of their low cost, quick positive response and being safe on the body without apparent side effects. The medicinal properties of several herbal plants have been documented in ancient siddha literature and the preparation have been found to be effective in the treatment of Diabetes. The following medicinal plants are commonly used

in treating diabetes as single drug or compound formulations.

PLANTS WITH ANTI DIABETIC ACTIVITY

Gymnema sylvestre R. Br

Family : Asclepidaceae
Part used : Leaves, Roots and the
Tamil Name : acid principle
Siddha : Siru Kurinjan
Medicine : **Sirukurinjan**
Chooranam

Pharmacology

Anti diabetes

The leaves have been mainly used as a remedy for Diabetes, they cause hypoglycemia, and it was first documented in the year 1920. In experimental animals when administered orally or by the injection, this effect is not due to any direct influence on the carbohydrate metabolism, but to stimulation of insulin secretion by pancreas. This action is gradual in natural, differing from the rapid effect of many prescription hypoglycemic drugs. This multipurpose plant has also been emphasized to possess significant anti diabetic potential in Indian traditional medicine for over 2000 years. The leaves raise insulin level, reduce glucose absorption from the intestine, improve uptake of glucose into the cells and prevent adrenal hormone from stimulating the liver to produce glucose, thereby reducing the blood glucose levels, glycosylated hemoglobin and glycosylated protein.

The antihyperglycemic activity of dried leaf powder of *Gymnema sylvestre* has been reported to cause a decrease in activity of gluconeogenic enzymes and removal of pathological changes in the liver initiated during hyperglycemic phase in alloxan induced rabbits. The chemical constituent gumarin present in the leaves when chewed interfere with the ability to taste sweetness. The primary application was for adult onset diabetes mellitus where it has been found that beta cells regenerated or repaired alone in type 2 diabetes on supplement action of *Gymnema sylvestre* leaves. It does not improve insulin resistance, various hypoglycaemic principles of gumar isolated from the saponin fraction of the plant are referred to as Gymnemosides and Gymnemic acids.

In insulin dependent diabetes mellitus (Type I) prolonged administration of *Gymnemasylvestre* extract improved blood glucose homeostasis and reduced insulin requirement better controlled hyper lipidemia and increased beta cell function.

Insulin requirements were decreased by about one half and average blood glucose decreased from 232 mg/dl to 152 mg/dl.

Gymnemic acid, a mixture of triterpene glycosides extracted from the leaves of *Gymnema sylvestre* inhibits the intestinal absorption of glucose in humans and rats.

***Tinospora Cordifolia* (wild) Miers ex Hook.f**

Family : Menispermaceae

Part used : roots, leaves, stems

Tamil name : Seenthil

Siddha Medicine : **Seenthil kudineer**
Seenthil Sarkkarai
Seenthil
Chooranam

Pharmacology

Anti diabetes

One teaspoonful of leaf powder mixed in milk is taken twice a day for 60 days.

Stem is boiled and taken with tea in diabetes.

Through various studies it has been found that the plant has blood sugar lowering activity, which has been proved by experiment on normal and alloxan induced diabetic rabbits. The hypoglycemic effect depends upon the functional status of pancreatic beta cells.

Oral administration of water extract of *Tinospora Cardifolium* root is reported to slow reduction in blood glucose, lipid levels, hepatic Glucose - 6 - phosphate, serum acid phosphatases, alkaline and lactate hydrogenases and increase in body weight in alloxan induced diabetic rats.

Extract of *Tinospora cordifolia* administered P.O (20 mg / 100 gm body weight) to normal and diabetic rates not only lowered blood sugar but also inhibited glucose induced hyperglycemia. The effect was more significant in moderate alloxan diabetes.

***Trigonella Foenumgraecum* Linn**

Family : fabaceae

Part used : Seeds

Tamil name : Venthayam

Siddha medicine: Mathumega Chooranam

Pharmacology

Anti diabetes

5 g seeds are soaked in water over night and made into paste. This paste is mixed with half cup of curd and taken daily in the early morning with empty stomach for 30 days.

It is a well-known hypoglycemic and hypolipidemic agent used in traditional Indian Medicine and is beneficial in both types of Diabetes.

A report brought out of the Indian council of Medical research states that fenugreek seeds, when given in varying doses of 25-100 g daily diminish reactive hyperglycemia

Various extract of different parts of this plant: Fibers, Proteins and saponine isolated from seeds were studied and reported to exhibit hypoglycemia. The defatted seeds of the fenugreek plant contain in ~50% fiber, (Similar to guar gum) along with a variety of bio active compound. When these extracts were given with meals for 21 days to alloxan induced diabetic rats there was significant hypoglycemic activity and anti glucosuric effect along with reduction in high plasma glucagon and somatostatin.

4-hydroxyisoleucine, a novel amino acid has been extracted and purified from fenugreek seeds found to increase glucose induced insulin release through a direct effect on the isolated islets of langerhans in both rats and humans.

Long used in herbal medicine defatted fenugreek seed powder given twice daily in a 50 gm dose to type 1 Diabetics results in significant reduction in fasting blood sugar and improved glucose tolerance tests.

In Type 2 diabetics the addition of 15 grams of powdered fenugreek seeds soaked in water significantly reduced post prandial glucose level. Fenugreek seeds contain fiber thought to slow glucose absorption from the fat.

Diet containing raw or germinated seeds (12-5g/day) reduced the fasting blood sugar of NIDDM patients. Ingestion of an experimental diet containing 25 g fenugreek seed powder by 60 non insulin dependent diabetic patients

reduced total cholesterol, LDL, VDL and triglyceride levels significantly.

Murraya Koeingii (L) spring

Family : Rutaceae

Part used :Leaves

Tamil name :kariveppilai

Siddha Medicine: Mathumega chooranam

Pharmacology

Anti diabetes

Eating 7 fresh fully grown curry leaves every morning for 3 months is said to prevent diabetes due to hereditary factors and also due to obesity as the leaves have weight reducing properties. Its anti diabetic property is based upon inhibition of digestive enzymes (pancreatic amylase) which is involved in break down of dietary starch to glucose.

Curry leaf powder supplemented for a period of 1 month in 30 type 2 diabetic patients reduced blood sugar level.

In one experimental study it has been found that oral administration of curry leaves for 60 days to normal rats showed hypoglycemic effect associated with increased glycogen sis and decreased glycogenolysis and glyconeogenesis.

The leaf shows significant hypoglycemic action in rat. However as per a report feeding curry leaf upto 15% in the diet causes only mild reduction in blood glucose in mild alloxan diabetic rats without significant effect on glucose levels in moderately streptozotocin diabetic rats.

Curry leaf supplementation to type 2 diabetic patients causes a transient decrease in blood glucose levels without significant influence on lipid parameters. A recent study shows that administration of curry leaf (water or alcohol extract) significantly reduce blood glucose levels in alloxan diabetic rats with an increase in insulin levels. A single oral administration of variable dose levels (200, 300 and 400 mg / kg) of aqueous extract led to lowering of blood glucose level in normal as well as in diabetic rabbits. The maximum fall of 14.68% in normal 27.96% in mild diabetic was observed after 4 hour of oral administration of 300 mg / kg. The same dose also showed a marked improvement in glucose tolerance.

Syzygium Cumini Linn

Family : Myrtaceae

Tamil name :Naaval

Uses :Seeds

**Siddha Medicine: Naaval Kottai
Chooranam**

Pharmacology

Anti diabetes

The seeds should be dried and powdered one teaspoon of this powder should be mixed in one cup of milk (or) water or half a cup of curd and taken twice daily.

The seeds are hypoglycemic. The fruit, the seeds and fruit juice are all useful in the treatment of this disease. The seeds contain a glucoside Jamboline which is believed to have the power to check the pathological conversion of starch into sugar in cases of increased production of glucose.

The inner bark is also used in the treatment of diabetes. The bark is dried and burnt. It will produce an ash of white color. This ash should be pestle in mortar strained and bottled. The diabetic patient should be given ten grams of this ash on an empty stomach with water in the morning and twenty grams in the afternoon and in the evening an hour after taking meals.

An equal quantity of Indian goose berry powder, Jamun powder and bitter gourd powder are useful for diabetes. A teaspoon of this mixture once or thrice a day is effective in checking the progress of this disease.

Defatted seeds and water soluble fiber from the seeds exhibit hypoglycemic effects in alloxan diabetic rats. The seeds extracts reduce tissue damage in diabetic rat brain. The seeds appear to be beneficial to type 2 diabetic patients.

The fresh powdered seeds of syzygium cumini was found to lower the level of blood sugar when 15 gram was administered orally thrice a day for 3 to 4 months. The fruits and seed are found to be promising hypoglycemic drugs.

Salacia oblonga wall. ex wight.and.arn

Family : Hippocrateaceae

Parts used : Bark

Tamil name : Kadalazhingil

**Siddha medicine: Kadal azhingil
Chooranam, Kadal azhingil pattai chathu**

Pharmacology

Anti diabetes

Oral administration of aqueous decoction of root bark to overnight fasted rats caused 30% reduction in glucose levels at 3 hrs potent. Natural a-glycosidase inhibitors such as kotalanol and salacinol isolated from the roots and stems of the plant exert potent inhibitory activity against sucrase.

S. Oblonga improves cardiac fibrosis and inhibits post prandial hyperglycemia in obese zucker rat. It is an alphaglycosidase inhibitor and the extract at a higher dose reduced the

plasma glucose and postprandial serum insulin incremental in humans.

Tea prepared from *S. oblonga* suppresses glucose absorption from the intestine. The water extract of the plant shows hypoglycemic and anti oxidant activity in strepto zotocin induced diabetic rats and normal rats.

Phyllanthus emblica Linn

Family : Euphorbiaceae, flowers

Parts used :Leaves, Dry fruit

Tamil name :Nelli

Siddha Medicine: Thiripala Chooranam, Mathumega Chooranam

Pharmacology

Anti diabetes

Dry fruit power 1 teaspoonful with milk is taken twice per day. Paste of fresh leaves (5g) is given daily for 1 month on an empty stomach.

Oral administration of the fruit extract (100 mg / Kg body weight) reduced the blood sugar levels in normal and in alloxan (120 mg / kg) diabetic rats. Hydrolysable tannoides from *E. officinalis* extract inhibits rat lens Aldose reductase which is involved in the development of some of the complications of Diabetes.

Casia auriculata Linn

Family : Caesalpiniaceae

Parts used : Leaves, flowers, park, seeds, root, gum

Tamil name : Aavarai

Siddha Medicine: Aavarai kudineer

Pharmacology

Anti diabetes

Leaves and flower juice with Thiripala Chooranam are used for the treatment of Diabetes.

C. Auriculata flower (water extract) suppressed the elevated blood glucose and lipid levels in streptozotocin induced diabetic rats. It exhibits hypoglycemic effects in normal rats also. *Casia auriculata*, exerts a strong antihyperglycaemic effect in rats comparable to therapeutic drug acarbose.

Andrographis paniculata (Burn - F) Nees

Family : Acanthaceae

Parts used :Leaves, stem

Tamil name :Nilavembu

Siddha Medicine: Nilavembu kudineer

Pharmacology

Anti diabetics

The anti-hyperglycemic and anti diabetic properties of this plant (alcohol extract) and

isolate andrographolide have been shown in rats.

The leaves crushed to powder along with the leaves of *Gymnema sylvestre*, *syzygium jambos*, *ziziphus rugosa*, *Aegle marmelos* and also with the leaves of *corallo carpus epigaeus* (leaf, tuber powder in 2:1 ratio) This powder of 1 spoonful is taken along with hot water twice daily for 7 days.

CONCLUSION

Recently most of the diabetic patients have been taking only siddha medicines and reducing their blood sugar level .The use of single medicinal plant as medicines , many herbal formulations containing more than one as ingredient are used in traditional medicine to treat diabetes.Pharmacological evaluation should be the yardstick for determining safety and efficacy of these medicinal plants.Development of scientifically formulated poly herbal formulation is very important.Each ingredient should be studied individually and in various combinations for efficacy and safety to determine the right ingredients and their relative proportion.

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