International Journal of Reverse Pharmacology and Health Research (IJRPHR)

Review article

Review on Anti-diabetic action Medicinal Plants in Siddha Medicine

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Abstract

Medicinal plants have been proposed as rich yet unexploited potential sources for anti-diabetic drugs, even though used since ancient times for the treatment of *diabetes mellitus*. Many of the synthetic drugs were discovered either directly or indirectly from the plant source. The aim of the study is to reveal the siddha anti-diabetic herbs and thier chemical constituents. The present study was aimed to review the plants having anti-diabetic property. Although many plants are recommended, further pharmacological and clinical research should be done to elucidate the exact mechanism of hypoglycaemic activity. A list of medicinal plants having anti-diabetic activity and other related beneficial effects used in treatment of diabetes is compiled. Most of the plants from family such *moraceae, menispermaceae, cucurbitaceae, fabacea, phyllanthaceae, myrtacea, smilaceae, rutaceae,* etc.

Keywords

Medicinal plants, anti-diabetic property, hypoglycaemic, siddha medicine.

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CODENJ : IJRPHR

To access this article online

Website : http://www.ijrphr.com/

DOI : 10.121/ijrphr/02.0203.332

Quick response code

Introduction

There is a general increase in non communicable diseases in India in the recent years. One of the most important is the diabetes mellitus which has been affecting a big population due to lifestyle changes. There are two main types of diabetes mellitus both of which tend to run in families. Type 1(insulin -dependent) diabetes is the less common form of disorder and usually develops in childhood or adolescence. In this type, insulin secreting cells in the pancreas are destroyed and insulin production ceases

How to cite this article:

Revathy P, Essakkypandian G, **Review on Anti-diabetic action medicinal Plants in Siddha Medicine,** International Journal of Reverse Pharmacology and Health Research, 2019, 2(2), 77-80.

Received: February, 2019.

Accepted: May, 2019.

Type 2 (non-insulin dependent) diabetes is chronic and develops gradually mainly in people over the age of 40 (Adeneye at 2009).

Although insulin is still produced, it is not enough for the body's metabolic need as the tissue become relatively resistant to its effect. (BMA, 2002 and Wadkar etal 2008).

Management of diabetes can be done through an ideal treatment using drugs in Siddha system of medicine that not only controls the glycemic level but also prevents the development of atherosclerosis and other complications of diabetes.

DIABETES & SIDDHA MEDICINE:

In siddha system of medicine, diseases are classified into 4448 types according to Yugi Vaithiya Chinthamani, Meganoi is classified into 20 types.

Madhumegam is one among them, which comes under pitha type called inippu neer and it could be correlated with diabetes mellitus in modern system.

Madhumegam is a clinical condition characterised by frequent and excessive passage of urine with 'sweetness' eventually leading to deterioration of seven body constituents.

HERBS USED TO TREAT DIABETES IN SIDDHA MEDICINE:

Herbs that are used in siddha medicine to treat diabetes rejuvenate the pancreas, increases secretion of insulin and enhance the glucose tolerance.

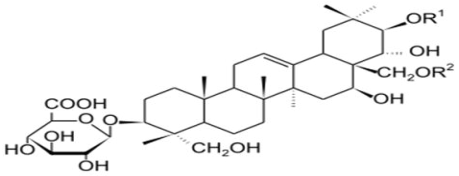
Herbs like *Ficus racemosa (*Atthi), *Nymphaea nouchali* (Alli), *Marsilea quadrifolia* (Aaraikeerai), *Tinospora cordifolia* (Seenthil), *Coccinia grundis* (Kovai), *Triticum aestirum* (Kothumai), *Cassia fistula* (Sarakondrai), *Eleusine coracana* (Kelviragu), *Benincasa hispida* (Kalyanapoosaani), *Pyllanthus amarus* (Keelaneli), *Syzygium cumini* (Naval), *Smilax china* (Parangipattai), *Terminalia arjuna* (Maruthu), *Limonia acidissima* (Vila), *Plectranthus vettiveroides* (Vilamichuver) are often used in siddha system medicine to treat diabetes.

TASTE AND DIABETES MELLITUS:

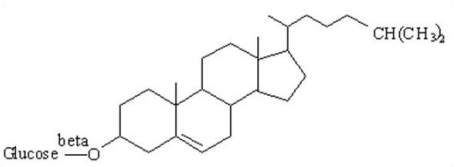
Madhumegam noi (diabetes mellitus) is resulted due to derangement of kapha humour. The above drugs are primarily having astringent and bitter tastes. These tastes normalise the deranged kapha humour and controls the *madhumegam noi.*

CHEMICAL STRUCTURES:

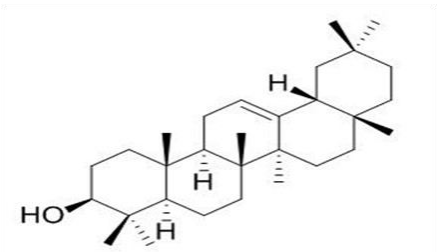
1. Gymnenic acid



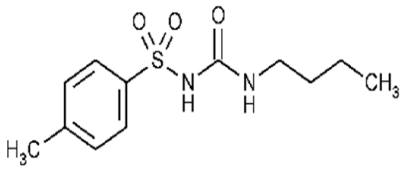
2. Charantin



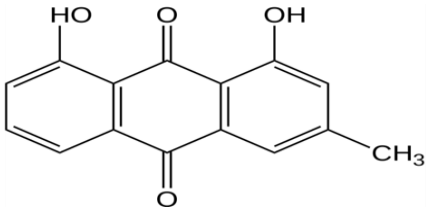
3. β-Amyrin



4. Tolbutamide



5. Chrysophanol



6. Hypophyllanthin

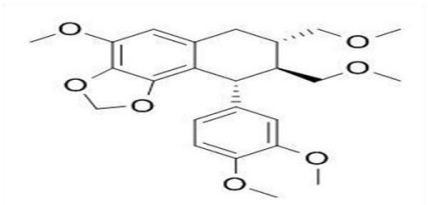
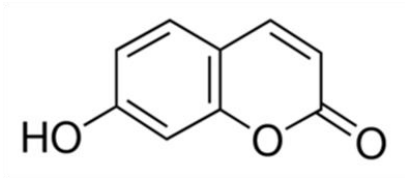


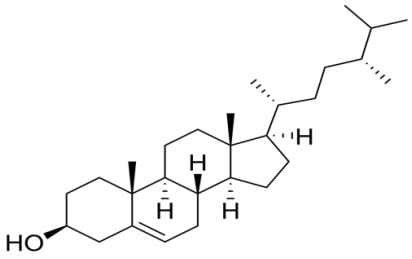
TABLE. 1 LIST OF SIDDHA ANTI-DIABETIC PLANTS AND ITS CONSTITUENTS

Family	Botanical Name	Tamil Name/ Common Name	Taste	Parts Used	Active Chemical Constituents
Asclepiadecae	*Gymnema sylvestre*	Sirukurinjan/ Sarkarai kolli	Little Astringent	Leaf	Gymnemic acid, gymnema saponin
Poaceae	*Triticum vulgare*	Kothumai/ Wheat	Sweet	Whole plant	Alkenes, Amine
Cucurbitaceae	*Momordica charantia* *Coccinia indica*	Pahal/ Bitter gourd Kovai/ Ivy-gourd	Bitter	Whole Plant Fruit	Charantin,momordicin, galactose-binding lectin, diosgenin, cholostrol B-amyrin, lupeol, cucurbitacin B
Myrtaceae	*Syzygium cumini*	Kirambu/ Jambolan	Astringent	Seed	mycaminase
Menispermaceae	*Tinospora cordifolia*	Seenthil/ Guduchi	Bitter	Stem	Berberine, choline, tembetarine, palam-tine, jatrorrhizine
Moraceae	*Ficus racemosa*	Atthi/ Clusterfig tree	Astringent	Stem bark	β-sistosterol
Smilacaceae	*Smilax china*	Parrangipattai/ China root	Bitter	Dried root	Phenyl propanoid glycoside, vanillic acid
Phyllanthaceae	Phyllanthus amarus	Keelanelli/ Stone breaker	Astringent	Whole plant	Methyl
Rutaceae	*Limonia acidissima linn*	Vila/ Wood apple	Astringent	Fruit pulp	Umbelliferone
Fabaceae	*Cassia fistula linn*	Sarakondrai/ Golden shower	Bitter	Stem bark	9, 10-anthra quinine oxalic acid tannins
Liliaceae	*Aloa vera*	Kattralai/ Barbados aloe	Bitter	Leaf	Pseudoprototinosaponin, prototinosapo-nin
Nymphacaceae	*Nelumbo nucifera*	Thamarai/ Sacred lotus	Bitter	flower	tolbutamide

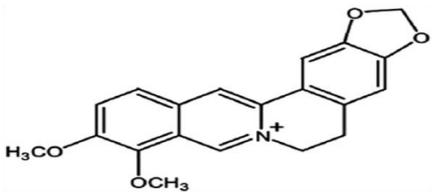
7. Umbelliferone



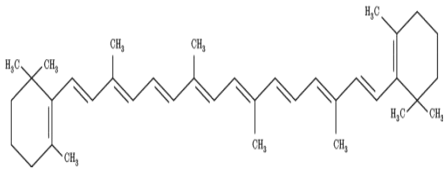
8. β-sitosterol



9. Beriberine



10. β-carotene



CONCLUSION

The present review has provide details of anti-diabetic plants used in the treatment of diabetes mellitus. However it is cost effective and more beneficial in the management of diabetes through dietary interventions, nutrient supplementation, and combination therapies with herbal drugs. The presence of bioactive principles are mainly responsible for this anti-diabetic action. More investigations must be carried out to evaluate the mechanism of action of medicinal plants with anti-diabetic effect.

CONFLICT OF INTEREST

None declared

SOURCE OF FUNDING

Nil

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ISSN 2589 3343