



Literature Search on the Bioactive Components in Medicinal Plants Controlling Diabetes Mellitus

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Abstract

Extract of different parts of plants to cure various diseases have been practiced since ancient period. These extracts are been part of the primary source of medicine in rural areas of the developing countries. It is been estimated that about 80% of the population in developing countries use traditional medicines as the health care medications. Newer plant based medicines are in the process of development using suitable drug delivery system and subsequent preclinical and clinical trials using modern techniques.

Keywords: Diabetes Mellitus; Plants; Bioactive Components

Introduction

Plants possess medicinal value have been used to cure various diseases including Diabetics mellitus. Bioactive components present in various parts of the plants are extracted by different methods for controlling and preventing Diabetics mellitus. It is well proven that diabetes leads to blindness, amputation, renal failure and cardiac arrest or stroke. As, herbal medicines have very effective therapeutic properties and they possess comparatively less adverse effect than modern medicines, the use of herbal medicines has been increased all over the world. Herbal medicines are considered as one of the best alternative to modern medicines though there are available approaches to treat diabetes and its secondary complications. While selecting a herbal medicine to treat diabetes, few imperative factors are to be considered, which include the stage of progression of diabetes, types of co morbidities of patients, availability of herbal drugs, safety profile of herbal drugs

and affordability. This literature reveals the role of various medicinal herbs for their hypoglycemic effect. Some of the important herbs are tabulated in table 1.

Search criteria

Peer reviewed articles having search terms diabetes mellitus, herbal medicines for diabetes, medicinal plant for diabetes, hypoglycemic herbs, insulin plants, insulin secretion and hyperglycemia. Searches were made on articles published in English in Google scholars, medline Iran medex, Irandoc, ISI, PubMed, Scopus, SID, Magiran and few other internet sources.

Broad inclusion criteria

A broad inclusion criteria was followed to select the literatures for the current review. These inclusion criteria include the search terms such as antidiabetic herbs, medicinal plant for diabetes.

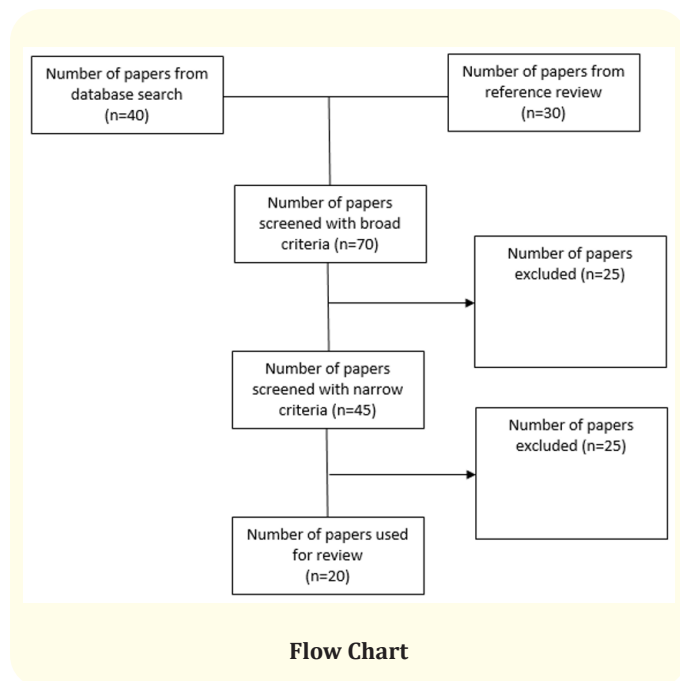
S. No	Scientific Name	Common name	Parts used	Component	Effect	References
1	<i>Acacia arabica</i>	Babhul	Seeds	Aegelin, marmesin, marmelosin	Induces hypoglycemia	[7]
2	<i>Azadirachta indica</i>	Neem	Leaves	Nimbidin	Control blood sugar levels	[8]
3	<i>Bauhinia forficata</i>	Brazilian orchid tree	Leaf	Astragalin, kaempferitrin	Hypoglycemic activity	[4]
4	<i>Boerhaavia diffusa</i>	Punamava	Leaves	Flavonoids, phenolic compounds, coumarins	Increase plasma insulin concentration	[18]
5	<i>Bombax ceiba</i>	Semul	Bark	Triterpenoids and steroid	Hypoglycemic	[19]
6	<i>Caesalpinia bonduc</i>	Guilandinabonduc,	Seed	Phenolic components and flavonoid derivatives	Hypoglycemic activity	[11]
7	<i>Carthamus tinctorius</i>	Safflower,	Flower	Glibenclamide	Hypoglycemic activity	[13]
8	<i>Costus spicatus</i>	Spiked spiral flag ginger	Leaf	Flavonoid, triterpene, glycoside,	Hypoglycemic activity	[12]
9	<i>Camellia sinensis</i>	Tea	Leaves	Polyphenols and caffeine	Anti-hyperglycemic activity	[16]
10	<i>Encostema littorale</i>	Krimihrita	Roots	Swertiamarin	Increase hexokinase activity	[15]
11	<i>Ferula assa-foetida</i>	Asafoetida	Gum	Ferulic acid	Hypoglycemic activity	[9]
12	<i>Gymnema sylvestre</i>	Gurmar	Leaves	Gymnemic acids	Utilisation of excess glucose in the blood.	[17]
13	<i>Lagerstroemia speciosa</i>	Banaba	Leaves	(Triterpenoid glycoside)	Lowers blood sugar	[6]
14	<i>Liriope spicata</i>	Creeping liriopie	Roots	Flavonoids, phenolic compounds, alkaloids	Hypoglycemic activity	[1]
15	<i>Momordica charantia</i>	Bitter melon	Fruit	Charantin, polypeptide-p and vicine	secretion of insulin from endocrine pancreatic β cell	[2]
16	<i>Panax ginseng</i>	“man-root.”	Root and root hairs.	Ginsenosides, a group of steroidal saponins	production of insulin	[10]
17	<i>Scoparia dulcis</i>	Sweet broom weed	Whole plant	Apigenin, luteolin, coixol, and glutinol	Insulin-secretagogue activity,	[3]
18	<i>Swertia chirayita</i>	Chirata	Whole plant	Naringin, kaemferol, rutin	Stimulates insulin release from islets	[14]
19	<i>Trigonella foenum-graecum</i>	Fenugreek	Seed	Diosgenin saponin	Enhances insulin secretion,	[5]
20	<i>Tinospora cordifolia</i>	Guduchi	Roots	Tinosporin, berberine	Antihyperglycemic	[20]

Table 1: Medicinal herbs and therapeutic information in Diabetes.

Narrow inclusion criteria

Literatures that met the broad inclusion criteria were further reviewed for the refinement of data to narrow down the search data to more specific to the current study.

Flow chart detailing the process of literatures screened for the current review.



Conclusion

The traditional knowledge such as pharmacological mechanism, side effects and curing effects of the medicinal plants opens up a new avenue in the modern society. The use of herbs having anti diabetic properties which leads to the well being of any diabetic patients is in growing pace. The usage of medicinal plants having hypoglycemic effects to treat diabetes mellitus and its secondary complications are of great concern in the current medicine system. It is essential to characterize the effects of various Bioactive compounds present in different herbs for their efficacy method of treatment. More clinical investigations and pharmacological studies need to be carried out to substantiate the anti diabetic and insulin mimetic activity of these medicinal plants.

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