IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

An Insight Into Herbal Management Of Diabetes: Commonly Used Herbs And Their Benefits

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ABSTRACT

Approximately 60% of people worldwide utilize traditional medicines made from medicinal plants. Indian herbal medications and plants used to cure diabetes, particularly in India, are the subject of this review. Diabetes is a serious illness that affects people from all walks of life in many different nations. It is turning out to be a serious health issue in India, particularly in cities. Although there are many ways to lessen the negative consequences of diabetes and its secondary complications, herbal formulations are recommended because they are less expensive and have less side effects. A list of herbal medications used to treat diabetes and medicinal plants with demonstrated antidiabetic and related therapeutic effects is compiled. The most prevalent endocrine condition, diabetes mellitus, affects 200 million people globally and 16 million people in the United States. Even if sophisticated synthetic medications are used for therapy, the usage of herbal medicines is becoming more important due to the disadvantages of synthetic medications. In order to improve the researcher's current understanding, this review paper attempts to provide up-to-date information on diabetes types and herbal formulations.

Keywords: Herbal medications, plants, diabetes mellitus.

I. INTRODUCTION

Brief Overview of Diabetes Mellitus Diabetes mellitus is an endocrine system metabolic disease marked by persistent hyperglycaemia and disruptions in the metabolism of carbohydrates, proteins, and fats due to deficiencies in insulin secretion, action, or both. • There are three different types of diabetes mellitus type 1, type 2, and gestational diabetes mellitus. Another name for type 1 diabetes mellitus is insulin-dependent diabetes. It is an autoimmune disease brought on by insufficient insulin due to a deficiency of beta cells. As a result, patients with this type of diabetes are entirely dependent on external sources of insulin. Insulin-

independent diabetes, another name for type 2 diabetes mellitus, is a condition that can be managed with medication, exercise, and dietary modifications.

Have type II diabetes, which is the more prevalent kind of the disease.

[1] Type 3 diabetes during pregnancy About 5 to 10% of pregnant women develop gestational diabetes melli tus, which often goes away once the baby is born. Type 2 diabetes is more common in women with gestatio nal diabetes.

Diabetes symptoms include:

• Blurred vision;

• Severe hunger ache or emptiness;

• Stress and aggravation;

• Frequent urination is one of the main signs of diabetes;

• Loss of weight suggests a problem with blood sugar levels and insulin function.

• Severe fatigue and weakness;

• Unusual thirst;

• Nausea and vomiting Mood swings, etc[2]

II. DIABETES CAUSES

Generation. Also brought on by viral infections.

• Other causes of diabetes include stress, obesity, elevated cholesterol, excessive consumption of sugar and oil, and inactivity.

• All three doshas are vitiated, according to Ayurveda, but vata is the most vitiated of the three.[3]

III. DO'S AND DON'T'S FOR DIABETES:

• Maintaining a healthy diet is crucial for individuals with diabetes.

• Vegetables like spinach and cucumbers, along with a low-fat diet, are essential for managing diabetes. In diabetics' diets onions, sprouts, beans, and garlic lower blood sugar levels. Fruits, veggie salad, tomatoes, and dairy goods like cheese should be consumed.

• Because they are difficult to digest, starchy foods like rice, potatoes, and white bread should be avoided. P atients with diabetes shouldn't be afraid to consume fruits high in sugar. They don't raise the production of in sulin and are safe. Coffee, sugar, processed wheat, alcohol, and heavy metals should all be consumed in sma ller quantities.be avoided. – Because the foods are readily digested and beneficial to diabetics' health, meals should be small.

• Stress should be avoided because it exacerbates the situation. Reducing the amount of salt in meals and avoiding mutton will help manage diabetes and body weight.

• Reducing blood pressure, diabetes, and cholesterol can be achieved by avoiding junk food and fatty foods.[4,19]

IV. Herbal antidiabetic medications:

1) Herbal antibacterial medications are used by diabetics to regulate their blood sugar levels.

2) There are about 600 producers of herbal medicines in India, and nearly all of them are creating herbal formulations for antibiotics.

3) Because of their antidiabetic properties, medicinal plants and herbs are utilized in extract form. Numerous clinical investigations have verified that the extract from medicinal plants has anti-diabetic properties and restores the function of pancreatic beta cells.[5,21]

4) Natural products are used to make herbal formulations, whilst chemicals and chemically modified natural products are used to make all apathic drugs.

5) When chemical medications fail to treat an illness, these medications are used.

Fig No.1. Advantages of herbal formulation

V. Examples of herbal antidiabetic drugs (Natural)

Table No.1 Examples of herbal antidiabetic drugs (Natural)

SR. NO	Examples of herbal antidiabetic drugs (Natural)
1	Allium sativum
2	Eugenia jambolana
3	Momordica charantia
4	Ocimum sanctum
5	Zingiber officinalis

1.Alliumsativum

• Family: Lilliaceae

• Common name: Garlic

• Part used: Petroleum ether extract of bulbs Active constituents: Allyproyl Disulphide oxide, Allicin

• Active constituent: Allyproyl disulphide oxide, allicin

• Mode of action: Improve plasma lipid metabolism and plasma[6,17]

Fig No.2: Allium sativum

• Fugenia jambolana: Jamun, an Indian gooseberry A decoction made from Eugenia jambolana kernels is used as a home treatment for diabetes in India. The Additionally, it is a significant component of several herbal diabetic remedies.

• Blood glucose levels are lowered by the antihyperglycemic impact of alcoholic and aqueous extracts as well as lyophilized powder.[7,18]

2.Eugenia jambolana

• Family: Myrataceae

• Common name: Jamun

• Part used: Pulp of fruit

• Active constituents: Oleanolic acid, ellagic acid

• Mode of action: Inherited insulinase activity from liver and kidney.

Fig No.3: Eugenia jambolana

• Fugenia jambolana: Jamun, an Indian gooseberry A decoction made from Eugenia jambolana kernels is used as a home treatment for diabetes in India. The Additionally, it is a significant component of several herbal diabetic remedies.

• Blood glucose levels are lowered by the antihyperglycemic impact of alcoholic and aqueous extracts as well as lyophilized powder. [7,16]

• This change according on the degree of diabetes. The reduction is 73.51% in mild diabetes (plasma sugar >180 mg/dl), while it is 55.62% and 17.72% in intermediate diabetes (plasma sugar >280 mg/dl) and severe diabetes (plasma sugar >400 mg/dl).[8,9]

3. Momordica charantia

• Family: Curcubitaceae

• Common name: Bitter gourd

• Part used: Fresh green leaves

• Active constituents: Charantin, sterol

• Mode of action: Activates PPARS alpha and gama and lower the plasma apo Beta100 in mice fed with high fat diet.

Fig No.4. Momordica charanti

• The bitter gourd, Momordica charantia In India and other Asian nations, it is frequently used as an antidiabetic and antihyperglycemic drug. Fruit pulp, seed, leaf, and entire plant extracts have been demonstrated to have hypoglycemic effects in a variety of animal models. When given subcutaneously to humans and langurs, polypeptide P, which was extracted from the fruit, seeds, and tissues of M. charantia, significantly reduced blood sugar levels.[10,12]

• In both normal and STZ-diabetic rats, ethanolic extracts of M. Charantia (200 mg/kg) demonstrated both hypoglycemic and antihyperglycemic effects.

4. Ocimum Sanctum

• Family: Labiateae

• Common name: Tulsi

• Part used: Entire herb

• ctive constituents: Eugenol

• Mode of action: Increased insulin release[11]

Fig No.5. Ocimum sanctum

• This plant has been recognized for its therapeutic qualities since ancient times. In both normal and alloxan-induced diabetic rats, the aqueous extract of Ocimum sanctum leaves significantly lowered blood sugar levels.

• Tulsi's hypoglycemic effects in diabetic rats were demonstrated by a significant decrease in fasting blood glucose, uronic acid, total amino acid, total cholesterol, triglyceride, and total lipid. The plasma glucose level decreased by roughly 9.06 and 26.4% on days 15 and 30 of the experiment, respectively, when plant extract (200 mg/kg) was administered orally for 30 days.[12,13]

5. Zingiber officinalis

• Family: Zingiberaceae

• Common name: Sunth

• Part used: Rhizome

• Active constituents: Gingerol,shogaol

• Mode of action: Increases insulin level.

Fig No.6. Zingiber Officinale

• Because Zingiber officinale directly interacts with many molecular and cellular pathways that trigger the pathogenesis of type 2 diabetes mellitus (T2DM) and prevents diabetic complications, it is being used as a diet-based therapy. The overall positive effects of Z. officinale on T2DM and its related problems are examined in this study. This article may help comprehend the molecular underpinnings of Z. officinale's impacts in type 2 diabetes in addition to clarifying its advantageous facts. [14,20]

• The inhibition of multiple transcriptional pathways, lipid peroxidation, carbohydrate metabolizing enzymes, and HMG-CoA reductase, as well as the activation of antioxidant enzyme capacity and low-density lipoprotein receptors, are the mechanisms underlying Z. officinale's antidiabetic effects.[15,22]

VI. CONCLUSION

ons of individuals worldwide suffer with diabetes mellitus, one of the most prevalent endocrine disorders. It is a collection of metabolic disorders marked by hyperglycemia brought on by deficiencies in insulin action, secretion, or both. Research is shifting toward traditionally available medications, which have a wide range of bioactivity, low side effects, and do not require laborious pharmaceutical synthesis. This is due to the rise in resistance and populations of patients at some risk, as well as the limited number of commercially available drugs for diabetes that are still available and have numerous side effects and issues like unwanted hypoglycemic effect.

Health professionals, scientists, and academics may find this review article helpful in developing evidence-based alternative medicine that uses herbal preparations to treat various types of diabetes. Isolated substances and extracts from various natural resources are crucial for the development of medications and the treatment of hyperglycemia in diabetes mellitus.

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