



From Fork to Function: A Comprehensive Review of Anti-Diabetic Foods.

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Abstract:

Diabetes mellitus, a nutritional disorder characterized by an abnormal elevation of blood glucose levels and the excretion of excess glucose in the urine, is rooted in an absolute or relative deficiency of insulin, leading to disruptions in carbohydrate, protein, and fat metabolism. Dating back to the ancient era of 1550 BC, the illustrious Ebers Papyrus advised the use of high-fibre wheat grains for diabetes treatment. Intriguingly, the utilization of plant-based foods endures as the predominant strategy for managing diabetes, now substantiated by a more sophisticated understanding of the scientific rationale. Across centuries, over 400 plants have been prescribed as remedies for diabetes. The historical prominence of raw onions, garlic, bitter melon, and ginseng as anti-diabetic agents in various cultures persists. Additionally, the proven anti-diabetic properties of mushrooms, barley bread, and an assortment of foods such as alfalfa, beans, cabbage, cinnamon, coriander seeds, cucumber, fenugreek seed, Indian gooseberry, Jambul fruit, lettuce, and turnips have endured the test of time. Ongoing contemporary tests consistently affirm their efficacy in lowering blood sugar levels or stimulating insulin production. This comprehensive compilation provides insights into some pivotal foods with promising benefits for the intricate management of diabetes.

Keywords: Nutritional disorder, metabolism, plant foods, insulin, blood sugar,

Introduction:

The term "Diabetes mellitus" finds its linguistic roots in the Greek word diabetes, meaning siphon - to pass through, and the Latin word mellitus, translating to sweet. The historical journey of this term takes us back to Apollonius of Memphis, who first employed the term "diabetes" around 250 to 300 BC. The sweet nature of urine in this condition was recognized by ancient Greek, Indian, and Egyptian civilizations, leading to the establishment of the term Diabetes Mellitus. In 1889, Mering and Minkowski unveiled the pancreas's pivotal role in diabetes pathogenesis. Fast forward to 1922, Banting, Best, and Collip's purification of insulin from cow pancreas at the University of Toronto marked a transformative moment, providing an effective diabetes treatment. Despite remarkable strides and numerous discoveries, diabetes persists as one of the most prevalent chronic diseases globally, retaining its status as the seventh leading cause of death in the US. Diabetes mellitus, a metabolic disease, involves inappropriately elevated blood glucose levels. The disease encompasses several categories, including type 1, type 2, maturity-onset diabetes of the young (MODY), gestational diabetes, neonatal diabetes, and secondary causes related to endocrinopathies or steroid use. The primary subtypes, Type 1 diabetes mellitus (T1DM) and Type 2 diabetes mellitus (T2DM) stem from defective insulin secretion (T1DM) and/or action (T2DM). T1DM typically presents in children or adolescents, while T2DM is associated with middle-aged and older adults experiencing prolonged hyperglycemia due to poor lifestyle and dietary choices. In this context, we delve into the discussion of foods proposed to lower blood sugar levels. This includes a diverse range such as artichoke, Bengal gram, bitter melon, black gram, broccoli, Butea leaves, cinnamon, curry leaves, fenugreek seeds, fibre-rich foods, antioxidant-rich foods, garlic, grapefruit, Indian gooseberry, spatula, jambul fruit, kidney beans, low-carbohydrate vegetables, mango leaves, margosa, onions, potassium-rich foods, sweet potato leaves, and soybeans. Exploring these dietary components offers insights into potential strategies for managing blood sugar levels in individuals with diabetes.^{[2][5][7][8]}

Soybean:

The soybean, belonging to the legume or pulses family, stands out as one of the most nutritious foods and holds the distinction of being among the earliest crops cultivated by humanity. Its esteemed status is attributed to its remarkable nutritional profile, serving as a valuable source of protein, vitamins, minerals, and various essential food components. Particularly noteworthy is its relevance in the treatment of diabetes, as highlighted in a publication from the Journal of the American Medical Association, which references an article by Dr. Christian Becker from an authoritative German Medical journal. Dr. Becker emphasizes the significant value of soybeans in diabetes management, underscoring that bread made from soybeans contains minimal starch but is rich in high-quality fat and protein. This nutritional composition is considered exceptionally beneficial for individuals dealing with diabetes. The prominence of soybean in therapeutic applications gained momentum in 1920 when Friedenwald and Ruhrah demonstrated its efficacy in the dietary management of diabetics. The utility of soybean in diabetes extends beyond its protein richness and palatability; it is also recognized for its mysterious ability to inexplicably reduce the percentage and total quantity of urinary sugar in diabetes patients adhering to standard dietary restrictions. The multifaceted advantages of soybeans position them as a valuable dietary ally in the holistic approach to managing diabetes.^{[12][13][7]}

Black gram:

Black gram, a highly esteemed pulse in India, holds a special place for its demulcent and cooling properties, making it a valued nervine tonic. Beyond its culinary significance, black gram is recognized as an anti-diabetic food with notable health benefits. In particular, fermented black gram, when consumed alongside half a cup of fresh bitter gourd juice, forms an effective remedy for managing mild types of diabetes. This combination is recommended for daily use over three or four months, coupled with carbohydrate restrictions. Even in more severe cases of diabetes, regular consumption of this combination, along with other precautions, proves beneficial as a health-promoting measure. It aids in preventing various complications that may arise due to malnutrition in diabetes patients. Additionally, the milk prepared by grinding sprouted whole black gram is considered a favourable dietary addition for individuals managing diabetes. The holistic approach of incorporating black gram into the diet showcases its versatility in promoting well-being and serving as a therapeutic element in diabetes management.^{[14][7][15][16]}

Butea leaves:

Butea, often referred to as the "flame of the forest," is a well-known tree native to India. Beyond its picturesque beauty, the leaves of this tree are recognized for their anti-diabetic properties, making them a valuable resource in managing blood sugar levels in individuals with diabetes. Particularly effective in addressing glycosuria, a condition marked by the significant presence of glucose in urine, the leaves offer a natural and beneficial remedy. Consumption of these leaves can be incorporated into one's routine by chewing them orally or by preparing an infusion or decoction. This versatile approach allows individuals to harness the anti-diabetic benefits of Butea in a manner that suits their preferences and aligns with traditional medicinal practices. Embracing the natural properties of the "flame of the forest" as an anti-diabetic food underscores the rich botanical diversity that contributes to holistic health practices in India.^{[18][7]}

Onion:

Onions, revered for their culinary versatility, have a longstanding history as a treatment for diabetes, dating back to ancient times. Modern research studies have further validated the efficacy of this pungent vegetable in lowering blood sugar levels in individuals with diabetes. Recent investigations in India involved feeding subjects varying doses of onion juice and whole onions, ranging from 25 to 200 grams. The findings revealed that the higher the dose of onion, the greater the decrease in blood sugar levels. Interestingly, whether consumed raw or cooked, the impact on blood sugar remained consistent. Researchers discovered that onions exert their influence on the liver's metabolism of glucose, insulin release, or prevention of insulin destruction. The potential active hypoglycemic substances identified in onions are allylpropyl disulphide and allicin. Remarkably, as early as 1923, researchers had observed the blood sugar-lowering properties of onions. In the 1960s, scientists isolated anti-diabetic compounds from onions, akin to common pharmaceuticals used to stimulate insulin synthesis and release. The enduring reputation of onions as a natural remedy for diabetes finds support in both historical practices and contemporary scientific investigations.^{[7][20][21]}

Artichoke:

Artichoke (*Cynara cardunculus* L. var. *scolymus*), a thistle species cultivated as a food source, boasts a unique profile with the edible portion being the flower buds harvested before blooming. Native to the Mediterranean region, this perennial plant, specifically *C. cardunculus* L. var. *scolymus*, stands out as a rich source of bioactive phenolic compounds, inulin, fibres, and minerals, earning its status as a functional food. Numerous pharmacological activities associated with artichoke have been explored in various studies, revealing its hepatoprotective, antioxidative, anticarcinogenic, hypocholesterolemic, antibacterial, anti-HIV, bile-expelling, and urinative effects. Particularly noteworthy are its strong antioxidative effects attributed to caffeoylquinic acid derivatives and flavonoids like luteolin glycosides. Artichoke also holds significant value as an anti-diabetic food due to its high insulin content. This remedy is recommended during the autumn season when the artichoke is fully ripe, containing more than two per cent insulin, which is later converted into sugar during winter. To reap the benefits, artichoke is best consumed raw in salads. If cooked, it should be boiled in a small amount of water for approximately 10 minutes. Importantly, it is advisable to retain the outer layers and cook the artichoke whole, combining it with other vegetables for a wholesome and nutritious addition to your diet.^{[4][7]}

Bengal gram :

Bengal gram, also known as chickpea, stands as one of the paramount pulses in India, valued for both its whole dried seeds and the form of dhal, created by splitting and husking the seeds. Beyond its culinary significance, the Bengal gram possesses numerous medicinal properties. When soaked overnight and chewed in the morning with honey, the whole gram seed acts as a general tonic. Additionally, the liquid obtained by soaking and macerating the seeds serves as a tonic. Notably, Bengal gram holds substantial value as an anti-diabetic food. Experiments have revealed that the oral ingestion of the water extract of Bengal gram enhances glucose utilization in both diabetic and normal individuals. Tests conducted at C.F.T.R.I. laboratories in Mysore included a chronic diabetic patient requiring approximately 40 units of insulin daily. When placed on a diet incorporating Bengal gram extract, the patient's condition significantly improved, leading to a reduction in insulin requirement to about 20 units per day. Diabetic patients adhering to a prescribed diet that includes liberal amounts of Bengal gram extract, without severe carbohydrate restrictions, have demonstrated considerable improvements in fasting blood sugar levels, glucose tolerance, urinary sugar excretion, and overall well-being. This underscores the therapeutic potential of Bengal gram as a dietary intervention in the management of diabetes.^{[7][17]}

Bitter Gourd:

Bitter gourd, a widely cultivated vegetable in India, is not just a common culinary ingredient but also boasts exceptional medicinal virtues. Renowned for its antidotal properties, it proves beneficial in reducing fever, strengthening the stomach, and enhancing its overall function. In the context of diabetes, bitter gourd has been utilized as a folk medicine in India since ancient times. Research conducted by a team of British doctors has identified insulin-like principles in bitter gourd, termed plant insulin, which has demonstrated effectiveness in lowering blood and urine sugar levels. This vegetable emerges as an effective anti-diabetic food and is recommended for inclusion in the diet of individuals with diabetes. The juice of bitter gourd, particularly more potent than the fruits themselves, is suggested for diabetic patients. Consuming the juice of three or four bitter gourds every morning on an empty stomach is advised. Additionally, the powdered seeds of bitter gourd can be added to regulate meals, and it can be incorporated in the form of a decoction by boiling the pieces in water or as a dry powder mixed with liquid foods.

Many diabetics also contend with malnutrition, and bitter melon, rich in essential vitamins and minerals such as A, B1, B2, C, and iron, serves as a preventive measure against complications associated with carbohydrate metabolism in diabetes. Beyond bitter melon, other spices exhibit drug-like properties in treating diabetes. Certain spices, including cinnamon, clove, turmeric, and bay leaves, have been found to stimulate insulin activity. Dr. Anderson of the United States Drug Administration discovered that these spices, when added to food, can enhance insulin activity, providing potential benefits for individuals with diabetes. Among them, cinnamon emerges as particularly potent, and even a small amount sprinkled on food items can contribute to maintaining blood sugar levels in check.^[7]

Curry leaves:

Curry leaves, derived from a beautiful, aromatic, and somewhat deciduous shrub, carry a slight bitterness and a distinctive aroma. Beyond their culinary appeal, these leaves possess herbal tonic qualities, making them a valuable addition to various dishes. In the realm of diabetes management, curry leaves emerge as a food of significant value. Consuming 10 fresh, fully-grown curry leaves every morning for three months is believed to be a preventive measure against diabetes, particularly in cases with hereditary factors. Additionally, these leaves showcase benefits in the treatment of diabetes associated with overweight individuals, as they are known to possess weight-reducing properties. The weight reduction often leads to a decrease in the presence of sugar in the urine of diabetes patients. Curry leaves can be incorporated into the diet in various forms, such as chutney, or their juice may be extracted and consumed with buttermilk or lassi. This versatile usage allows individuals to enjoy the potential health benefits of curry leaves in a manner that suits their preferences and dietary habits.^{[22][7]}

Fenugreek Seeds:

Fenugreek, a well-known leafy vegetable, is not only a culinary delight but also proves to be a valuable addition to maintaining overall health and cleanliness in the body. In Indian cuisine, the leaves of fenugreek are commonly used as a cooked vegetable, contributing to its regular consumption. However, it is the seeds of the fenugreek plant that stand out as exceptional cleansers within the body. Known for their high mucus solvent and soothing properties, fenugreek seeds hold considerable medicinal value, particularly in the treatment of diabetes. Research studies conducted at the National Institute of Nutrition in Hyderabad indicate that fenugreek seeds, when administered in varying doses of 25 grams to 100 grams daily, effectively diminish reactive hyperglycemia in diabetic patients. Additionally, glucose levels in diabetic patients were significantly reduced when combined with a daily intake of 1200 to 1400 calories, a common recommendation for individuals with diabetes. Incorporating fenugreek seeds into one's routine can be done in various ways. A teaspoon of the seeds can be swallowed with water daily. Alternatively, the seeds can be soaked overnight in water and consumed first thing in the morning. The soaked seeds can also be dried and powdered, with the resulting powder taken with milk in a dose of one teaspoon twice daily. These versatile methods offer individuals flexibility in incorporating fenugreek seeds into their daily routine to harness their potential health benefits, especially in the context of diabetes management.^{[24][25][7]}

Fibre-rich foods:

The American Diabetes Association, after decades of recommending low-carbohydrate diets for diabetics, recognized its error in 1979 and shifted its stance to advocate the inclusion of foods high in dietary fibre in diabetic meals. The British Diabetic Association also aligns with this perspective, promoting a high-fibre diet for individuals with diabetes. Foods rich in fibre are considered highly beneficial in the treatment of diabetes, with whole-grain cereals standing out as one of the best sources of dietary fibre. Renowned nutritionist Denis Burkitt, in his book 'Don't Forget in Your Diet,' emphasizes the positive impact of a traditional whole-food diet on diabetes. According to Burkitt, diabetes can decrease or even disappear in individuals following such a diet. The British Medical Journal, in its December 25, 1997 issue, further supports this view, stating that a high-fibre diet-induced remission of diabetes in 85 per cent of the patients tested. Historically, in Britain between 1941 and 1954, the use of only high-fiber national flour was mandatory. During this period, the diabetic mortality rate witnessed a significant decline of 54 per cent. Soluble fibre found in barley, oatmeal, fruits, carrots, and dried beans has been identified as beneficial in reducing blood sugar levels. For diabetes patients, gradually increasing the intake of such soluble fibre in their diets has shown to decrease or even eliminate the need for supplemental insulin and other anti-diabetic medications. This underscores the pivotal role of dietary fibre in diabetes management and its potential to bring about positive changes in blood sugar control.^[7]

Foods high in Antioxidants:

Dr. James Anderson, M.D., from the University of Kentucky College of Medicine, recommends that individuals with diabetes pay extra attention to consuming foods rich in antioxidant vitamins E, C, and beta-carotene. The rationale behind this advice lies in the abnormal and more severe artery-clogging process observed in diabetics. Particularly in diabetics, the bad-type LDL cholesterol is more susceptible to oxidation, making it more likely to become "toxic" and contribute to the clogging of arteries. This heightened vulnerability to oxidation may explain the two to three-times higher risk of heart disease in diabetics, as explained by Dr. Anderson. The perilous oxidized cholesterol is a result of high levels of sugar in the blood sustained in diabetes. As sugar undergoes metabolism, it releases oxygen-free radicals that tend to render cholesterol toxic. A consistent supply of antioxidants can counteract this process. Beta-carotene, found in foods like carrots, dark orange and green leafy vegetables, sweet potatoes, dried apricots, spinach, and pumpkins, is a key player in this regard. Foods rich in Vitamin C, such as Indian gooseberry, red and green sweet peppers, broccoli, Brussels sprouts, cauliflower, strawberries, citrus fruits, and cabbage, also contribute to combating oxidative stress. Additionally, major sources of Vitamin E include vegetable oils, almonds, soybeans, and sunflower seeds. Prioritizing these antioxidant-rich foods can play a crucial role in supporting the health of individuals with diabetes and reducing the risk of heart-related complications.^[7]

Garlic:

Garlic and its constituents have demonstrated the ability to lower blood sugar levels in scientific trials, making it a noteworthy inclusion for individuals with diabetes. This vegetable is notably rich in potassium, which effectively replenishes the potassium lost in large quantities in the urine of diabetics. Additionally, garlic contains zinc and sulfur, both of which are constituents of insulin. Some authorities suggest that low levels of zinc may contribute to the onset of diabetes. The presence of manganese in garlic is also significant, as a deficiency in this mineral can be linked to diabetes. Beyond its impact on blood sugar, garlic offers other benefits for individuals with diabetes. It plays a role in preventing atherosclerosis, a common complication associated with diabetes. Diabetics can incorporate the equivalent of one or two cloves of garlic into

their daily diet in various forms, such as raw garlic, cooked in food, or capsule form. However, the most effective way to consume garlic is to chew it thoroughly in its raw form, preferably first thing in the morning. This ensures that individuals with diabetes can maximize the potential health benefits of garlic and support their overall well-being.^{[7][26][27]}

Grapefruit:

Grapefruit holds a distinguished position among citrus fruits, revered for its delightful flavour, appetizing properties, and refreshing qualities. Beyond its culinary appeal, grapefruit serves as a significant health-builder and tonic, making it a valuable addition to a balanced diet. Notably, grapefruit is recognized as an anti-diabetic food of great value. Dr. Joe Shelby Riley, a reputable authority on nutrition, extols the virtues of grapefruit as a splendid food for diabetes. According to him, incorporating grapefruits more liberally into the diet could potentially reduce the prevalence of diabetes. For individuals with diabetes, Dr. Riley recommends consuming grapefruits three times a day. Similarly, for those without diabetes but with a tendency towards it who wish to prevent its onset, incorporating grapefruit into their daily routine three times a day is advisable. Dr. Riley emphasizes the importance of concurrently reducing the intake of starches, sweets, and fats while increasing the consumption of fruits, vegetables, and juices. Following this dietary approach for two weeks can lead to the elimination of sugar in individuals not taking insulin. For those taking insulin, the process may take a bit longer. This underscores the potential impact of grapefruit as a dietary intervention in the management and prevention of diabetes.^{[7][28][29]}

Indian Gooseberry:

Indian gooseberry, or amla, stands as a remarkable fruit, considered one of the precious gifts of nature to humanity. Rich in antioxidant vitamin C, it is easily assimilated by the human system, contributing significantly to overall health. Particularly for diabetes, Indian gooseberry serves as an ideal food medicine. Consuming a tablespoon of Indian gooseberry juice, mixed with a cup of fresh bitter gourd juice, daily for two months can have beneficial effects. This combination stimulates the Islets of Langerhans, facilitating the secretion of natural insulin. As a result, it helps reduce blood sugar levels in individuals with diabetes. It's crucial to strictly observe dietary restrictions while incorporating this medicine. Beyond its impact on blood sugar, Indian gooseberry also plays a role in preventing eye complications associated with diabetes. This underlines the holistic health benefits that this fruit offers, making it a valuable addition to the diet of individuals managing diabetes.^{[7][30]}

Ispaghula:

Ispaghula, also known as psyllium seeds, is a nearly stemless small herb covered with dense or soft hairy growth. The medicinal properties of these seeds primarily stem from the significant amount of mucilage and albuminous matter present in them. Ispaghula is recognized as an anti-diabetic food, and its use has been found beneficial in the treatment of diabetes. One of its key benefits is its ability to control blood sugar in diabetics by inhibiting the excessive absorption of sugars from the intestines. Ispaghula can be consumed in the form of seeds or in the form of a husk, which is the dry seed coat obtained by crushing the seeds and separating the husk through winnowing. The husk retains the same properties as the seeds but comes with the added advantage of avoiding the risk of mechanical obstruction or irritation in the alimentary canal. The husk can be taken without presoaking and is considered easier to use than the whole seeds, making it a convenient option for those incorporating a spatula into their dietary regimen.^{[7][37]}

Jambul Fruit:

The jambul fruit, also known as the rose apple or Java plum, is widely cultivated and cherished in India, renowned for its distinctive taste, flavour, and colour. Beyond its culinary appeal, this fruit is recognized for its anti-diabetic properties, making it valuable in traditional medicine. In indigenous systems of medicine, the jambul fruit is considered a specific treatment for diabetes due to its beneficial effects on the pancreas. The fruit itself, along with its seeds and fruit juice, can be used in the treatment of diabetes. The seeds contain 'jamboline,' believed to have the power to counter the pathological conversion of starch into sugar, especially in cases of increased glucose production. To utilize this property, the seeds are dried and powdered. This powder, when mixed with water, should be consumed three or four times daily. It has been observed to reduce the quantity of sugar in urine and alleviate excessive thirst associated with diabetes. In Ayurveda, the inner bark of the jambul tree is also considered valuable for diabetes treatment. The bark is dried and burned to produce white-coloured ash. This ash, when ground and strained, can be administered to diabetes patients. The recommended dosage is 66 centigrams on an empty stomach in the morning and 1.33 grams each in the afternoon and evening, an hour after meals. This ancient remedy highlights the diverse ways in which the jambul fruit is utilized to address diabetes in traditional medicine.^{[7][32][33]}

kidney bean or French bean:

Beans, particularly the widely used French bean or kidney bean, are among the most commonly consumed vegetables worldwide, boasting various varieties. These legumes are rich in carbohydrates and fibre, making them a beneficial addition to diets aimed at preventing and managing diabetes. Dr. James Anderson emphasizes that foods effective in lowering cholesterol and combating heart disease are also excellent for individuals with diabetes, who face a heightened risk of heart-related complications. Soluble fibre-rich foods, including beans, have been shown in more than 50 studies to significantly reduce blood sugar, triglycerides, and cholesterol levels. Kidney or French beans, in particular, hold significant value in the context of diabetes management. A decoction made from French bean pods is considered an excellent remedy for diabetes. The recommended procedure is to consume one glass of decoction every two hours during the day. To prepare the decoction, boil 60 grams of fresh kidney bean pods (seeds removed) in four litres of water on low heat for four hours. After straining through a fine muslin cloth, let it stand for eight hours. It's crucial to make the decoction fresh daily, as its medicinal properties diminish after 24 hours. This treatment should be continued for four to eight weeks, accompanied by adherence to a prescribed diet chart. The juice extracted from French beans is also noted for its value in diabetes. It stimulates insulin production and is often used in combination with Brussels sprout juice in diabetes treatment. It's essential for the patient to strictly follow a controlled diet regimen alongside this treatment. This holistic approach underscores the potential benefits of incorporating beans into the diet for individuals managing diabetes.^{[7][34][35]}

Aloe vera:

Aloe vera, a perennial succulent known for its curative properties, has been utilized for centuries. Thriving in arid regions with low rainfall, it stores water in its leaves to endure dry conditions. The plant consists of two main parts: the outer green rind with vascular bundles and the inner colourless parenchyma containing aloe gel. Aloe vera's chemical composition includes amino acids, anthraquinones, enzymes, minerals,

vitamins, lignins, monosaccharides, polysaccharides, salicylic acid, saponins, and phytosterols. Aloe vera, a well-known houseplant, has a rich history as a versatile folk remedy. The plant yields two primary products: gel and latex. Aloe vera gel is the leaf pulp or mucilage, while aloe latex, often termed "aloe juice," is a bitter yellow exudate from the pericyclic tubules beneath the outer skin of the leaves. Extracts of aloe gum have demonstrated increased glucose tolerance in both normal and diabetic rats. Chronic treatment with exudates from *Aloe barbadensis* leaves exhibited a hypoglycemic effect in diabetic rats. Both single and chronic doses of the bitter principle of *Aloe barbadensis* also showed hypoglycemic effects in diabetic rats. This action is attributed to the stimulation of insulin synthesis and/or release from pancreatic beta cells. Additionally, *Aloe vera* exhibits dose-dependent anti-inflammatory activity and enhances wound healing in diabetic mice. These findings highlight the potential therapeutic benefits of *Aloe vera* in managing diabetes and supporting overall health.^{[7][36][37]}

Giloy:

Giloy, also known as Amrita or Guduchi in Hindi, is an herb recognized for its benefits in improving digestion and enhancing immunity. The plant features heart-shaped leaves resembling betel leaves, and all parts of the plant find applications in Ayurvedic medicine. However, the stem is particularly esteemed for its beneficial compounds. *Tinospora cordifolia* (*T. cordifolia*), the stems of which are commonly used in Ayurvedic medicine, has been studied for its potential in managing diabetes. Previous research highlights *T. cordifolia* as a potent antidiabetic plant material due to its richness in nutraceuticals. Giloy, in the form of *Tinospora cordifolia*, holds significance in Ayurvedic medicine for treating various conditions, including general senility, fever, diabetes, dyspepsia, urinary infections, jaundice, and skin issues. For individuals with diabetes or blood sugar concerns, the consumption of Giloy is particularly beneficial. It is recommended for diabetic patients to drink Giloy juice every morning on an empty stomach or take 1/2 teaspoon of Giloy Churna twice a day with water after lunch and dinner. This practice is believed to help bring sugar levels under control.^{[7][38][39]}

Mangol leaves:

Mango, a long-living large evergreen tree belonging to the Anacardiaceae family, boasts an array of pharmacological effects, making it a valuable resource. Its properties include being antidiabetic, antioxidant, antimicrobial, anticancer, and anti-inflammatory. The mango is particularly rich in various polyphenolic compounds, with mangiferin being a major component found throughout the plant. Mangiferin, a xanthone derivative, is hailed as a super antioxidant, showcasing pharmacological effects such as antioxidant, radioprotective, anti-allergic, antidiabetic, anticancer, antimicrobial, immunomodulatory, and anti-inflammatory activities. The tender leaves of the mango tree are recognized as an anti-diabetic food. An infusion can be prepared from fresh leaves by soaking them overnight and squeezing them in water in the morning. This filtrate is recommended for consumption every morning to help manage early diabetes. Alternatively, the leaves can be dried in the shade, powdered, and stored for later use. Half a teaspoon of this powder mixed in water or buttermilk should be taken twice a day as a remedy for diabetes.^{[7][40]}

Low carbohydrate vegetable:

Vegetables containing less than three per cent carbohydrates have demonstrated benefits in the prevention and control of diabetes. Among the notable vegetables falling into this category are cucumber, lettuce, radish leaves, and spinach. Individuals with diabetes should include these vegetables generously in their diet for better management of the condition.^[7]



Glycine max



Vigna mungo



Butea monosperma



Allium cepa



Cynara cardunculus



Cicer arietinum



Momordica charantia



Bergera koenigii

*Trigonella foenum-graecum**Allium sativum**Citrus x paradisi**Phyllanthus**Psyllium**Syzygium cumini**Phaseolus vulgaris**Aloe vera**Mangifera indica**Tinospora cordifolia*

Fig No. 1: Photographs of the traditionally used Medicinal plants

Table no. 1: Common Indian names of the Plants, Fruits and Pulses.

Common Indian names								
English	Hindi	Bengali	Marathi	Gujarati	Kannada	Malayalam	Tamil	Telugu
Soyabean	Bhat	Garikalia	-	-	-	-	-	-
Black Gram	Urad	Mashkalair	Udid	Aadad	Uddina	Uzhunna	Ulutham	Minapa
Butea Leaves	Palas	Palas	Paras	Khakro	-	-	Palau	Patasamu
Onion	Piyaz	Pyaz	Kanda	Kandoo	Eerulli	Ulli	Vengayam	Neerulli
Artichoke	Hathichuck	Hathichuck	-	-	-	-	-	-
Bengal Gram	Channa	Chola	Barbara	Chana	Kendall	Kadala	Koyhuka dalai	Senegal
Bitter Gourd	Karela	Karela	Karle	Karela	Hagal Kai	Kaippakka	Pavakai	Kakara Kaiji

Curry Leaves	Curry Patta	Barsanga	Kadhi Limb	Mitha Limbdo	Karibevu	Kariveppilai	Kariveppilai	Karivepaku
Fenugreek Seeds	Methi	methi	methi	methi	mentha	ventayan	Venthiyakkerria	menthol
Garlic	Lahasoon	Rashun	Lasson	Lasan	Bellulli	Vellulli	Ullipoondu	Vellullui
Grapefruit	Chakotra	Bilati batabi	Bedaana	Chakotra	Draksha	Mundri pazham	-	-
Indian Gooseberry	Amla	Amlaki	Anvla	Amla	Nellikai	Nellikai	Nellikai	Usirikayi
Isphagula	Ishabgul	Isabgul	-	Ishabgul	-	Karkatasringi	Ishappukoi	Isphagula
Jambul Fruit	Jamun	Kaloram	Jambhool	Jambu	Nerelai	Naga pazham	Naga pazham	Neredu pandu
kidney bean	Bakla	-	Pharasbee	Fansi	Huruli kayi	-	-	-
Aloe vera	Ghikanwar	Ghrithakumari	Korphad	Kunwar	Lolisara	Kattawazha	Chirrukat talai	Kalabandha
Tinospora	Gurcha	Gulanacha	Gulvel	Garo	-	Chittamrutu	-	-
Mango leaves	Aam	Aam	Amba	Keri	Mavin-hannu	Mam pazham	Mam pazham	Mamidi pandu

Table no. 2: Botanical Name and its Family

Common name	Botanical name	Family	genus
Soyabean	Glycine max	Fabaceae	Glycine
Black Gram	Vigna mungo	Fabaceae	Vigna
Butea Leaves	Butea monosperma	Fabaceae	Butea
Onion	Allium cepa	Amaryllidaceae	Allium
Artichoke	Cynara cardunculus	Asteraceae	Cynara
Bengal Gram	Cicer arietinum	Fabaceae	cicer
Bitter Gourd	Momordica charantia	Cucurbitaceae	Momordica
Curry Leaves	Bergera koenigii	Rutaceae	Bergera
Fenugreek Seeds	Trigonella foenum-graecum	Fabaceae	Trigonella
Garlic	Allium sativum	Amaryllidaceae	Allium
Grapefruit	Citrus × paradisi	Rutaceae	Citrus
Indian Gooseberry	Phyllanthus emblica	Phyllanthaceae	Phyllanthus
Isphagula	Psyllium	Plantaginaceae	Plantago
Jambul Fruit	Syzygium cumini	Myrtaceae	Syzygium
kidney bean	Phaseolus vulgaris	Fabaceae	Phaseolus
Aloe	Aloe vera	Asphodelaceae	Aloe
Giloy	Tinospora cordifolia	Menispermaceae	Tinospora

Mango leaves	Mangifera indica	Anacardiaceae	Mangifera
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Conclusion:

Exploring different foods and their impact on diabetes management reveals a combination of traditional wisdom and modern science. Foods like soybean, bitter melon, garlic, and others offer potential benefits for individuals dealing with diabetes. The integration of age-old practices with contemporary research provides a comprehensive approach to health. From the historical origins of "Diabetes Mellitus" to our current understanding, each food contributes uniquely to diabetes care. It's a practical toolkit for those navigating the complexities of this condition. As we blend tradition with science, there's a promising landscape for effective diabetes management, offering individuals a well-rounded approach to well-being.

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