NATURAL MEDICINES USED IN THE TRADITIONAL INDIAN MEDICAL SYSTEM FOR THERAPY OF DIABETES MELLITUS
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ABSTRACT
Health and disease are coeval with life. Form time immemorial man has been interested in trying to control diseases. Medicinal plants play an important role in the management of diabetes mellitus especially in developing countries where resources are meager. The medicine man and herbalist undertook in various ways to cure man’s disease and bring relief to the sick. One of the chronic, world wide heterogeneous of it will be 5.4% by the year 2025, with the global diabetic population reaching to 300 million. Among all the WHO regimes, South East Asian region are highest affected with maximum global burden of the disease and by year 2025 there will be nearly 80 million diabetic in the region. Type 2 diabetes has become a global epidemic. WHO has pointed out this prevention of diabetes and its complications is not only a major challenge for the future, but essential if health for all is to attain. Therefore, in recent years, considerable attention has been directed towards identification of plants with antidiabetic ability that may be used for human consumption. Further, it emphasizes strongly in this regard the optional and rational uses of traditional and natural indigenous medicines. Modern medicines, despite offering a variety of effective treatment options, can have several adverse effects. Ayurveda, a science that uses herbal medicines extensively, originated in India. Few of these herbs, such as Momordica charantia, Pterocarpus marsupium, and Trigonella foenum greacum, have been reported to be beneficial for treating type 2 diabetes. Mechanisms such as the stimulating or regenerating effect on beta cells or extra pancreatic effects are proposed for the hypoglycemic action of these herbs. The traditional medicines demonstrated a bright future in therapy of diabetes and to understand the importance of traditional herbs.

Keywords: Diabetes, Medicinal Plants, Traditional Medicine.

INTRODUCTION
Diabetes mellitus (DM) is a chronic metabolic disease characterized by hyperglycemia that has a significant impact for their patients. Its incidence is raising leading to an increase in the cost of the cares of the disease and of its complications. The treatment involves, besides dietary control and physical activity, the use of drugs that cause side effects to reach wanted pharmacological actions. However, products of plants are, frequently, considered less poisonous and with fewer side effects than synthetic drugs and widely used by the population. Diabetes mellitus is a global metabolic epidemic affecting essential biochemical activities in almost every age group. Indian literatures like Ayurveda have already mentioned herbal remediation for a number of human ailments. Among Indian traditional medicinal plants several potential anti-diabetic plants and herbs are being used as part of our diet since prehistoric time. The rapidly increasing diabetes mellitus is becoming a serious threat to mankind health in all parts of the world. The control and treatment of diabetes and its complications mainly depend on the chemical or biochemical agents, but the fact is that it has never been reported that someone had recovered totally from diabetes. With the distinctive traditional medical opinions and natural medicines mainly originated in herbs, the traditional Indian medicine performed a good clinical practice and is showing a bright future in the therapy of diabetes mellitus and its complications. Several medicinal plants have been used as dietary adjunct and in the treatment of numerous diseases without proper knowledge of their function. Although phytotherapy continues to be used in several countries, few plants have received scientific or medical scrutiny. Indian plants which are most effective and the most commonly studied in relation to diabetes and their complications are: Allium cepa, Allium sativum, Aloe vera, Cajanus...
cajan, Coccinia indica, Caesalpinia bonducuella, Ficus bengalenesis, Gymnema sylvestre, Momordica charantia, Ocimum sanctum, Pterocarpus marsupium, Swertia chirayita, Syzigium cumini, Tinospora cordifolia and Trigonella foenum graecum. Among these we have evaluated M. charantia, Eugenia jambolana, Mucuna pruriens, T. cordifolia, T. foenum graecum, O. sanctum, P. marsupium, Murraya koeingii and Brassica juncea. All plants have shown varying degree of hypoglycemic and anti-hyperglycemic activity.

**DIABETES MELLITUS WORLDWIDE-MAJOR SOCIO-ECONOMIC CONCERN**

Diabetes mellitus (DM), the third killer of the mankind health along with cancer, cardiovascular and cerebrovascular diseases, is one of the most challenging diseases facing health care professionals today. The World Health Organization (WHO) has declared that a DM epidemic is underway. Primary DM and its complications are costly to manage, not only for affected individuals, but also for healthcare systems around the world. Screening of anti-diabetic agents has been extensively investigated in the past decades. Natural products (NPs) have served as a major source of drugs for centuries, and about half of the pharmaceuticals in use today are derived from natural substances. Many natural products especially plants-derived medicines have been recommended for the treatment of DM. Diabetes is a metabolic disorder where in human body does not produce or properly uses insulin, a hormone that is required to convert sugar, starches, and other food into energy. Diabetes mellitus is characterized by constant high levels of blood glucose [sugar]. Human body has to maintain the blood glucose level at a very narrow range, which is done with insulin and glucagons. The function of glucagons is to release glucose from the liver to the blood stream so that, it can be transported to body tissues and cells for the production of energy. The prevalence of type 2 diabetes is about 12% in urban India, and it is estimated that the country has the largest number of these patients in the world. Among the several reasons for this low rate of glycemic control are an inadequate compliance with oral antidiabetic drugs due to multiple dosage frequency, and side effects such as hypoglycemia. It has been reported that type 2 patients on monotherapy who convert from a multiple dose regimen to a once daily formulation increase their adherence to medication by 23%, and that this is reflected in lower HbA1c levels. In India, Egypt and Sudan around 70 percent of the rural people use traditional medicine. Similar situation exists in a large number of developing countries. In India and China 60 percent of the people affected with cholera and malaria are treated with herbal medicines. In these countries the market for traditional medicines is US $ 500 million while Western type medicine account for only US $ 300. Antidiabetic Plants brings us closer to the translation of traditional knowledge into new methods for treatment of this important disease. The role of traditional medicines in the solution of health problems is invaluable on a global level. This is all the more striking when we consider the fact that approximately 80% of the people living in less developed countries rely exclusively on traditional medicine for their health care needs. Traditional Indian and Ayurvedic medical system for example, have been evolved during thousands of years and have left for posterity a well documented literary legacy which permits us to recognize immediately a theoretical base whose conceptual framework even if were more or less archaic is found to be logical. In other countries the ethnomedical heritage has not reached a high status. However, many useful points can still be found in
them. The increasing prevalence of diabetes mellitus world-wide is an issue of major socio-economic concern.

![Fig. (1). Top 10 countries in prevalence of diabetes and number of people with diabetes (20-79 age group) in 2007.](image)

**DIABETES AND METABOLIC SYNDROME**

**Type I Diabetes,**

Usually starts in childhood or early adulthood and accounts for less than 10 percent of the total number of diabetics. The exact cause of this sub-type is unclear but it is believed to be an autoimmune disease, which is precipitated by some environmental “trigger”, such as a virus. This leads to an inappropriate immune response involving the destruction of the insulin-producing cells of the pancreas. Individuals who develop this disease can no longer adequately metabolize blood glucose and must have daily insulin injections for the remainder of their lives. The insulin regime has to be strictly controlled, as too much insulin can result in hypoglycemia (very low blood sugar) and potentially death. Conversely, failure to provide supplemental insulin will lead to hyperglycemia (very high blood sugar), coma and death. In between these two dangerous extremes is a zone where the patient is not at immediate risk of dying. However, even within the non-lethal range of blood glucose concentrations, inadequate treatment may lead to severe complications such as cardiovascular disease, kidney failure, circulatory impairment, nerve damage, cataracts and infections.

**Type II Diabetes**

Unlike Type I diabetes, where there is insufficient insulin production, in Type II diabetes the pancreas produces normal or greater than normal quantities of insulin. However, the biochemical abnormalities that
arise in the latter type manifest themselves as insulin resistance. These defects cause hyperglycemia by interfering with the normal function of insulin and thereby glucose uptake into the cells. The increased levels of fat oxidation commonly found in Type II diabetics are also considered to be a cause of insulin resistance.

Metabolic Syndrome
Also known as Syndrome X or Insulin Resistance Syndrome, metabolic syndrome is not only considered a disease in its own right, but is also a precursor to Type II diabetes and increases the risk for cardiovascular disease and stroke. Metabolic Syndrome is characterized by insulin resistance, high blood pressure, elevated triglyceride levels, low HDL levels and central obesity (fat accumulation around the abdomen and abdominal organs). To compensate for the unresponsiveness to insulin, the pancreas produces more insulin. This destabilizes several metabolic processes, leading to tissue and organ damage.

INSULIN RESISTANCE
In order to understand the approaches to the prevention and control with herbs for diabetes, it is helpful to consider the processes underlying insulin resistance. Before a cell will allow glucose through its protective membrane, its insulin receptor must be “turned on” by insulin or a chemical mimic. Insulin resistance occurs when the receptor develops a weakened response to insulin resulting in the cell’s failure to absorb sufficient quantities of glucose from the blood. This results in energy deprivation for the cells and raised blood glucose levels. The primary cause of this weakened insulin receptor response is the chronic over-production of insulin. Not only does too much insulin lead to receptor failure, but wide fluctuations in insulin levels are also known to be an important cause of this condition. These oscillating levels are, in turn, closely associated with a diet high in refined carbohydrate foods.

DIET AND INSULIN RECEPTOR FAILURE
Extreme changes of insulin levels are typically the result of a diet dominated by high intake of refined carbohydrate foods. Products such as sugar, sweetened soft drinks and white bread, are absorbed quickly from the intestines into the bloodstream causing a sudden rise in blood glucose levels. These foods are said to have a “high glycemic index”, or high GI, because of their rapid absorption and the resulting peak in blood glucose levels. In order to stimulate the cells to absorb this sudden glucose load, the pancreas responds by releasing larger than normal quantities of insulin. The excessive amount of insulin produced to achieve this effect results in a sudden fall in blood glucose, and within a couple of hours this level becomes very low. The subsequent intake of more high GI foods causes the blood glucose to rise dramatically once more, perpetuating the cycle of wildly fluctuating glucose and insulin levels. If this steady bombardment of the receptors by large amounts of insulin continues over a long period, it eventually causes their malfunction and insensitivity. It is a bit like repeatedly forcing an oversized key into a lock. After a while, the excessive wear and tear caused by the large key results in damage to the lock making it increasingly harder to turn. If this continues for long enough, the lock wears out and fails to work altogether. Herbs for diabetes can help to counter these effects.

THE ROLE OF INSULIN
Insulin is a hormone produced by the islet cells of the pancreas. These cells secrete insulin into the bloodstream in response to
the rise of blood glucose that occurs following the ingestion of carbohydrates. Insulin then binds to receptors on the surface of cells causing them to absorb glucose from the blood stream. It also controls the conversion of glucose into energy stores in the form of glycogen in muscle and liver cells, and fat in adipose tissue. When blood glucose levels decrease, insulin production falls to a certain point where it remains until further carbohydrates are ingested and absorbed from the intestines. This mechanism is finely tuned and, in healthy people, keeps blood glucose levels within a narrow range. If there is insufficient, or no response, to insulin the cells are effectively starved of glucose, and blood glucose levels become dangerously elevated. Insulin works in concert with several other hormones, therefore abnormalities in both its production and performance can have a wide range of adverse consequences.

**ANTIDIABETIC HERBS**

Antidiabetic Plants highlights the potential role of dietary and medicinal plant materials in the prevention, treatment, and control of diabetes and its complications. The number of herbal agents that are hyperglycemic is relatively small and unlikely to cause interaction issues.

**Principal antidiabetic herbs in common use:**

- Allium cepa (Onion bulbs)
- Allium sativum (Garlic cloves)
- Anacardium occidentale (Cashew leaves)
- Arctium lappa (Burdock roots)
- Catharanthus roseus (Madagascar Periwinkle leaves)
- Cuminum cyminum (Cumin seed)
- Eleutherooccus senticosus (Siberian Ginseng)
- Galega officinalis (Goat’s Rue seeds)
- Gymnema sylvestre (Gymnema leaves)
- Momordica charantia (Bitter Melon fruit)
- Olea europaea (Olive leaves)
- Oplopanax horridum (Devil’s Club root bark)
- Opuntia spp. (Prickly Pear stems and fruit)
- Panax ginseng (Chinese Ginseng root)
- Phaseolus vulgaris (Kidney bean, immature pods)
- Taraxacum officinale (Dandelion plant)
- Trigonella foenum-graecum (Fenugreek seeds)
- Urtica dioica (Stinging Nettle plant)
- Vaccinium myrtillus (Bilberry leaves)

**Less commonly used antidiabetic herbs:**

- Adiantum capillus-veneris (Adiantum plant)
- Anacardium occidentale (Cashew leaves)
- Andrographis paniculata (Earleaf)
- Arctium lappa (Burdock roots)
- Argyreia cuneata (Rivea leaves)
- Atriplex halimus (Salt Bush leaves)
- Bidens pilosa (Aceitilla plant)
- Blighia sapida (Akee Apple seeds)
- Brassica oleracia (Cabbage)
- Cecropia obtusifolia (Guarumo leaves and stem)
- Coccinia grandis (Coccinia roots)
- Coccinia indica (Ivy gourd)
- Corchorus olitorius (Jute leaves)
- Courarea latiflora (Copalchi root bark)
- Cucumis sativus (Cucumber fruit)
- Cuminum cyminum (Cumin seed)
- Hordeum vulgare (Barley sprouts)
- Hydrastis canadensis (Goldenseal root)
- Hygrophila auriculata (Barleria plant)
- Inula helenium (Elecampane root)
- Lagerstroemia speciosa (Lagerstroemia leaves and ripe fruit)
- Lupinus albus (Lupin seeds)
- Lycium barbarum (Box Thorn leaves)
- Lycopus virginicus (Bugleweed plant)
- Morus spp (Mulberry leaves)
- Musa sapientum (Banana flowers and roots)
- Nymphaea lotus (Lotus roots)
- Ocimum sanctum (Sacred Basil plant)
- Oenothera biennis (Evening Primrose leaf)
- Polygonatum multiflorum (Solomon’s Seal root)
- Psittacanthus calyculatus (Injerto flowers, leaves, and stem)
- Rhus typhina (Staghorn Sumach leaves)
- Salpianthus arenarius (Catarinita flowers)
- Sarcopoterium spinosum (Thorny Burnet root bark)
- Scoparia dulcis (Sweet Broom plant)
- Securinega virosa (Fluggea seeds)
- Spinacea oleracea (Spinach leaves)
- Syzygium jambolanum (Jambul seeds)
- Tecoma stans (Tronadora leaves)
- Tinospora cordifolia (Gulancha plant)
- Triticum sativum (Wheat leaves)
- Turnera diffusa (Damiana leaves)
- Zea mays (Corn silk)

**Common herbs with hyperglycemic activity:**
- Apium graveolens (Celery seed)
- Bupleurum falcatum (Bupleurum)
- Centella asiatica (Gotu kola)
- Rosmarinus officinalis (Rosemary)

**ANTI-DIABETIC EFFECTS OF KEY SPICES**

Herbs for diabetes include the following spices and their specific biochemical actions:

**Increase insulin sensitivity:** Caper, cinnamon, fenugreek, ginger

**Mimic effects of insulin:** Caper, coriander, garlic

**Enhances insulin secretion:** Coriander

**Modulates glucose absorption:** Fenugreek

**Lower blood lipids:** Cinnamon, fenugreek

**Reduces fat oxidation:** Cinnamon

**INDIAN NOVEL TRADITIONAL HERBS WITH ANTI-DIABETIC POTENTIALS**

Since ancient times, various herbs are being used to treat diabetes. Scientific investigations have confirmed the effectiveness of these herbs. Medicinal plants used to treat diabetic conditions are of considerable interest and a number of plants have shown varying degrees of hypoglycaemic and antihyperglycaemic activity. Some of the major diabetes herbs are:

**Pterocarpus Marsupium**

Pterocarpus Marsupium, also known as Indian Kino, Malabar Kino, Pitasara, Venga, is a large deciduous tree, which commonly grows in western and southern parts of India and Sri Lanka. It has demonstrated ability to reduce the absorption of glucose from the gastrointestinal tract. It is also known to improve insulin and pro-insulin levels.

**Bitter Melon (Momordica charantia)**

Bitter melon, also known as balsam pear, bitter gourd, bitter cucumber, karela, and charantin, is cultivated widely in Asia, East Africa and South America. It has been extensively used as a folk medicine for treatment of diabetes. Several compounds contained in bitter melon are known to account for its ability to lower the levels of sugar in the blood.

**Gymnema Sylvestre**

Gymnema sylvestre, also known as Gurmar, Meshasringi and Cherukurinja, is popular as “sugar destroyer”. The leaves of the plant are dried and pounded together with coriander fruit, and then the juice is extracted to be given orally for remedying diabetes. In India, the herb is primarily being used to treat type II diabetes. It is also being found in over-the-counter weight loss products and blood sugar balancing formulas.

**Onion & Garlic (Allium Cepa & Allium Sativum)**

Onion and garlic have long been used by herbal practitioners to treat diabetes. Experimental and clinical evidence suggests ample on the anti-diabetic properties of onion and garlic. Garlic has an additional
benefit i.e. it has positive cardiovascular effects. It is known to lower lipid levels and inhibit platelet aggregation. Liberal use of onion is recommended for diabetic patients, while garlic is to be taken in moderate amounts.

Fenugreek (Trigonella foenum-graecum)
Fenugreek is a crop plant that is grown as a pot herb. The habitat range of the plant extends from eastern Mediterranean area to China. Fenugreek is used as both an herb and a spice (seed). Pre-clinical and clinical studies on the herb have indicated its anti-diabetic properties. The fiber-rich fraction of fenugreek seeds can help in lowering blood sugar levels in people with diabetes.

Blueberry (Vaccinium Myrtillus)
Blueberries are a natural remedy for regulating the blood sugar levels, whenever they are slightly elevated. Researches on blueberries have come up with impressive results. They contain an active ingredient with an extraordinary ability to get rid of excessive sugar in the blood. They also work as a good astringent and help to relieve inflammation of the kidney, bladder and prostate.

Asian Ginseng
Asian ginseng is commonly used by the traditional practitioners of Chinese medicine, to treat diabetes. The herb has shown good results in enhancing the release of insulin from the pancreas and increasing the number of insulin receptors. The herb has a direct effect on lowering blood sugar levels. Asian ginseng also helps in elevating mood and improves psycho-physiological performance.

Ginkgo Biloba
Ginkgo biloba has also been used in the traditional Chinese medicine practice for the treatment of diabetes. This herbal medicine, which is now found over around the world, is extracted from the fan-shaped leaves of the ancient ginkgo biloba tree. The extract may help in the prevention and treatment of early-stage diabetic neuropathy. It also improves the blood flow in the peripheral tissues of the nerves in the arms, legs, hands, and feet.

NATURAL HERBS USED FOR DIABETES TREATMENT

Cinnamon (Cinnamomum verum)
Cinnamon has begun to find favor with modern science as an herbal treatment for diabetes. The active ingredient, methylhydroxy chalcone polymer (MHCP), has been shown to increase the body’s cells’ sensitivity to insulin. This helps improve the efficiency of insulin and increase the conversion of glucose to energy. It has even been claimed that cinnamon may triple insulin’s efficiency, whether natural or injected. It also has anti-oxidant properties that help to reduce the damaging effects of diabetes.

Bitter Melon (Momordica charantia)
Bitter melon has been used extensively in traditional medicine for the treatment of diabetes. Its blood sugar lowering capabilities has attracted diabetics to this herbal supplements for centuries. Charantin, one of the active ingredients in Bitter melon, has been shown to be a potent hypoglycemic agent. It has similar effects to many hypoglycemic drugs used in diabetes treatment. Momordica, another active ingredient, has insulin-like effects, further decreasing blood glucose levels. Due to the potent hypoglycemic effect this supplement should be taken with care when using medications to control diabetes.

Pterocarpus marsupium (Indian Kino, Malabar Kino, Pitasara, Venga)
This medicinal herb has been used in ayurvedic medicine for diabetes treatment for a long time. In clinical studies it has been shown to provide a blood sugar balancing property. Epicatechin, a flavonoid extracted from the bark of this plant, protects the beta cells in the pancreas from damage that
causes a reduction in insulin production. In studies involving rats, this herbal treatment for diabetes even showed promise in rejuvenating damaged beta cells in the pancreas. This is the only herb, or drug, with this potential.

**Gymnema Sylvestre** *(Gurmar, Meshasringi, Cherukurinj)*

Gymnema sylvestre has been called the “sugar killer” due to its ability to reduce sweet cravings. Gymnema helps the pancreas with insulin production in type 2 diabetics, and increases the sensitivity to insulin in type 1 diabetics. Some type 2 diabetics have been able to discontinue their use, or reduce their dosage, of oral diabetic medications with use of this supplement (although this is not recommended without consultation with a medical professional.)

**Fenugreek** *(Trigonella foenum-graecum)*

Fenugreek has strong anti-diabetic properties, as well as triglyceride and LDL cholesterol lowering effects. It has also been shown to support HDL (good cholesterol) levels. Defatted fenugreek seed powder has been shown in studies to increase glucose tolerance and decrease fasting blood glucose levels after as few as 7 days.

**Goldenseal** *(Hydrastis canadensis)*

Goldenseal has strong hypoglycemic properties and insulin supporting effects, as well. Although not as rapid as bitter melon, the blood sugar lowering effects of this supplement make it a good pre-meal supplement to increase glucose tolerance. Its insulin support also increases the glucose lowering effect.

**Panax Ginseng** *(Panax ginseng)*

Panax ginseng has many health boosting properties in all individuals. Those with diabetes may benefit from direct blood sugar control, increased insulin secretion and the number of insulin receptors, and an increase in energy. Panax ginseng has also been shown to support cardiovascular function and support blood vessel health and tone, a common problem for those with diabetes.

**BITTER MELON AND DIABETES MELLITUS**

Diabetes is a challenging disease. Sufferers are subject to a regime which revolves around managing time, balancing exercise, and measuring quantities precisely in order to control their blood sugar level. Diabetics must always think about what they eat in terms of the effects of carbohydrates, exercise, and insulin. Bitter melon herb contains plant chemicals which have the same effects as those produced by the commonly prescribed anti-diabetic drugs but without the side effects. One possible side effect of diabetes medications is low blood sugar, so bitter melon should not be used if any of these drugs are being taken, because it is itself a hypoglycemic. Bitter melon also lowers cholesterol, which may benefit type 2 diabetics, especially when obesity is a factor. Also the absence of fat and presence of phosphorous, calcium, and iron in the fruit add value for the type 2 diabetic by bringing sound nutritional elements into the equation. The herb can be taken as a tea made from the leaves, but an extract of the fruit made into juice, tincture, or capsules is recommended for diabetics, as the hypoglycemic properties are concentrated in the fruit. Making bitter melon part of our diet and eating it regularly may prevent the development of type 2 diabetes in those predisposed to it and delay the progression of the disease in those in its early stages. Eating foods with a low glycemic index whenever possible is also an important step in diabetes management. This type of diet has also been shown to reduce not only diabetes but also and coronary heart disease. Bitter melon herb is thought to be a safe alternative to anti-diabetic drugs. Diabetics are always advised, however, to work closely with medical professionals before
bitter melon herb is used, especially if taking anti-diabetic drugs or drugs that lower cholesterol. Bitter melon herb should not be taken by those trying to conceive, pregnant women, or breastfeeding women.

**Pharmacological Action OF Bitter Melon**

It contains Gurmarin, a polypeptide considered to be similar to bovine insulin, which has been shown in experimental studies to achieve a positive sugar regulating effect by suppressing the neural response to sweet taste stimuli. Bitter melon principle constituents are lectins, charantin and momordicine. The fruits have long been used in India as a folk remedy for diabetes mellitus. Lectins from the bitter gourd have shown significant antilipolytic and lipogenic activities. The fruits and leaves of the plant contain two alkaloids, one of them being momordicine. The plant is reported to contain a glucoside, a saponin-like substance, a resin with an unpleasant taste, an aromatic volatile oil and a mucilage. The seeds contain an alkaloid (m.p. 236°) and an anthelmintic principle in the germ; they also contain urease. The fruits, leaves and extracts of Momordica charantia has been reported to possess pharmacological properties and medicinal uses. Bitter gourd being rich in all the essential vitamins and minerals, especially vitamin A, B1, B2, C and Iron, its regular use helps to prevent many complications such as hypertension, eye complications, neuritis and defective metabolism of carbohydrates. It increases body's resistance against infection. Bitter gourd is a highly beneficial help in the treatment of blood disorders like blood boils, scabies, itching, psoriasis, ring-worm and other fungal diseases.

**NATURAL CURE FOR DIABETES**

**Carbohydrates and Proteins**

Research has shown that a decrease in carbohydrate consumption helps to lower blood sugar. Foods like flour, white rice and sweets are things that spike blood sugar. Therefore, it's a good idea to limit or remove these entirely from the diet. On the other hand, eating protein helps to keep blood sugar levels stable.

**Exercise**

Exercise is important for everyone, especially for diabetics. You don't have to run a marathon to see a change. Simply losing just a few pounds can make such a difference. Cutting out foods like soda and chips and taking walks instead of driving are simple things you can do to see some weight loss.

**Ayurvedic Herbs**

Before doctors handed out prescriptions, people used herbs. Many Ayurvedic herbs are excellent in lowering and stabilizing blood sugar. Some of these are Saptrangi, Vizaysaar, Gurmaar and Jamun, to name a few. Some of these herbs also help to fight off infections or skin conditions associated with diabetes.

**Other Foods and Supplements**

Bitter gourd has been used as a folk medicine for diabetes. Ground curry leaves are also said to be an effective cure. Fenugreek seeds and garlic are useful as well in controlling diabetes. Ginseng and magnesium are helpful in regulating blood sugar. Bitter melon increases the cells that make insulin.

**CONCLUSION**

Diabetes is an illness that affects millions of people. It occurs when the body no longer produces or cannot properly use insulin. Early symptoms of diabetes include frequent urination, extreme hunger and excessive thirst among others. However, there are other alternatives, including more natural options to keep diabetes under control and even cure it. Lifestyle changes and different food choices can help to reverse diabetes. Education is the key in gaining power over diabetes. No one wants to hear that they have
diabetes as it can be a devastating diagnosis. However, it doesn't have to control you. There are many things you can do keep to your diabetes under control. The local health food store is a good place to find herbs and supplements. Before there were drugs from drug companies, natural cures were used and they can still be used today. There are many herbs with strong anti-diabetic properties. Exercise is crucial as most people diagnosed with Type II diabetes are overweight. Starting with 20 minutes a day can be a huge benefit. The more you know, the better you will be prepared to manage your diabetes. Thus plant-based herbal drugs or botanicals are emerging as the primary components of holistic approaches to diabetes management.

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