

Research Paper

***The Power of Medicinal Plants
for Managing Type II Diabetes Mellitus***

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Introduction:

According to the N.D.E.P., the National Diabetes Education Program, around 25.8 million people suffer from diabetes, which represents 8.3 percent of the U.S. population. However, there are about 7 million people who are unaware that they have diabetes. The number of patients diagnosed with diabetes has been rising. For example, in 2010 about 1.9 million people from the age 20 or older were found to have diabetes. On the other hand about 79 million people age 20 or older are pre-diabetic. Nevertheless, in blood reports of pre-diabetic patients, you find elevated blood sugar levels, which are not high enough to be classified as diabetic. **1**

The World Health Organization WHO declared that globally 347 million people currently have diabetes. In 2004 about 3.4 million people passed away due to consequences of high fasting blood sugar. The WHO predicts that diabetes will be the 7th primary cause of death in 2030. **2**

The problem in managing Diabetes is that the medicines available for diabetes management take care of the symptoms but do not address the underlying cause of the condition. In addition, the continual intake of allopathic medicines damages several organs such as kidneys, liver, pancreas, and this disastrous trend eventually affects the whole body. As a consequence, controlling elevated blood sugar levels becomes more and more challenging and impossible at some point, which confirms the silent-killer effect of diabetes.

However, the onset and progression of type II diabetes can be prevented or alleviated by eating a healthy diet that matches one's constitution or dosha, practicing Yoga or other physical exercises, preserving a normal body weight, and avoiding unhealthy foods such as processed, frozen, highly glycemic nutrients, alcohol, and tobacco. Furthermore, there are many herbal remedies that help control diabetes and diabetic complications.

Diabetes viewed from a Western perspective

Diabetes is a chronic and complex metabolic disorder resulting from either insulin insufficiency or insulin dysfunction. There is an imbalance in the metabolism of sugar because the cells cannot absorb the glucose that flows in the blood. Consequently, sugar is not available there where it is needed.

There are three types of diabetes, Type I and Type II, and Gestational Diabetes. Type I is an autoimmune disease, and about 5 % of patients having this condition are insulin dependent due to an insulin insufficiency, which is caused because of a lack of functional beta cells in the pancreas. So, the pancreas cannot make the insulin needed to digest sugar. This makes it difficult to metabolize carbohydrates, fats, and proteins. In the beginning, patients only feel the effects of diabetes after having a meal. But, later their body does not produce enough insulin in order to do the basic physiological tasks. Some of the symptoms that people feel are dizziness, and they may also find it difficult to concentrate. In such situations, the body starts to fight this condition by extracting glucose from all the sources where glucose is left in the body. This is done with the use of the hormone adrenaline. This condition makes the patient feel a light hypoglycemia, and the body starts to shake; then, the heartbeat goes up, and a feeling of uneasiness sets in. If this physiological state of being is left untreated, the patient can experience a shock due to hypoglycemia. This kind of shock is the first symptom of Type I Diabetes. Normally, Type I Diabetics are mostly very thin. They may have a normal weight or they may be under weight. During the onset of Type I Diabetes, patients lose weight especially because their muscles kind of melt away especially because they do not get the sugar they need to build muscle mass. Therefore, patients suffering from Type 1 diabetes are totally dependent on an external source of insulin.

In comparison to Type I, Type II Diabetes affects about 95% of the patients. However, patients mostly acquire this condition genetically from a parent or another blood relative. Patients suffering from Type II Diabetes are not insulin dependent and can be treated with dietary modifications, exercise, and oral medications that lower blood sugar levels. Furthermore, Type II Diabetes mostly occurs in adults, and obesity, bad eating habits, stress and mental tension often trigger this condition as well. Some symptoms that are indicators of Type II Diabetes are feeling increasingly thirsty and having a frequent urge to urinate. When the blood sugar reaches very high levels, the

body tries to reduce the amount of blood sugar by getting rid of it through urination. Hence, the patient feels increasingly thirsty and with the water or urine the sugar is discarded from the body. Another sign for Type II Diabetes is the fact that although the pancreas produces insulin, it is not used to metabolize glucose, and this is physiologically fatal. The reason is that the cells do not accept and use insulin the way they normally should be doing. As a result, the cells do not get the glucose they need for their metabolic process. However, this condition urges the pancreas to make more and more insulin, which can go well for some time but not forever. At some point, the pancreas is exhausted, and its beta cells cannot produce any insulin any more. Therefore, in the initial stage, patients can control their Type II Diabetes with diet, exercise, and medicine. However, when the pancreas does not produce insulin then they also become insulin dependent. **3**

The third form of Diabetes is Gestational Diabetes, which develops during pregnancy. Dr. Stuart Weiss, MD from the New York University School of Medicine says that during pregnancy the body does not respond to insulin. **4** Similar to Type II Diabetes, it is hereditary and is said to mostly occur among ethnic groups such as African Americans, Hispanic American, American Indians, and Asian women. Gestational Diabetes mostly disappears after delivery, however these women are at risk of acquiring Diabetes later in life.

Consequences of Diabetic Progression

Hyperglycemia or high blood sugar affects our body in many negative ways: Even slight elevations after meals can initiate changes in our body such as narrowing of our arteries and blood vessels, which is caused by the plaque that settles in the arteries, capillaries, and blood vessels as well. This raises the pressure of the blood flow. Consequently, several organs are negatively affected:

- a. The flow of blood through the chambers of the heart decreases and some point the patient can experience a heart failure.
- b. The kidneys cannot filter the blood well enough because the blood vessels become leaky. This leads to protein deposits in the urine, which leads to protein deficiency in the blood. Furthermore, the kidneys do not get enough blood, which reduces their ability to filter the fluids, and this leads to kidney failure. When the kidneys do not get enough blood, then the body raises the blood pressure to kind of force blood into the kidneys so that it reaches it faster.

- c. The feet are also a sensitive area for diabetics. If they are injured, then the healing process is often very slow. This can lead to ulcers and other complications. Therefore, diabetics have to take care of their feet especially if the blood circulation is weakened.
- d. Since the nerves get their blood supply through tiny veins, the function of the nerves can be compromised especially when the blood vessels have plaque. Then blood cannot be supplied sufficiently to the different areas of the body. When the supply of oxygen and nutrients decreases, then the function of the nerves is undermined. As a consequence, patients feel much pain, tingle, or numbness.
- e. The eyes are also very sensitive organs that get be affected by the narrowing of the blood vessels. When the eyes do not get enough blood and nutrients, patients develop eye problems and cannot see very well. This can lead to blindness.
- f. When the brain does not get enough blood and nutrients, then the whole physiology is affected, but this condition can also lead to a stroke.

Owing to the affects of diabetes mentioned above, allopathic medicine recommends to lead a life style that promotes health and controls the progression of diabetes. A patient has to have regular physical activity, nutrition that is not high glycemic, enough rest and relaxation, and the medicines that help control the progression of diabetes. Furthermore, the blood sugar levels have to be regularly controlled by the intake of medicines like Metformin or insulin, which have to be adjusted according to the needs of the patient.

Although, allopathic medicines are effective in controlling the elevation of blood sugar levels, they also have side effects that cause discomfort, complications in later sates of Diabetes, and also the destruction of organs like the kidney, liver etc., and this condition can even heart failure. The worst effect is that Diabetes does not become better but gets gradually worse. Dr. Julian Whitaker, professor at the New York University School of Medicine claims the following in his article “Dangers of Diabetic Drugs”:

“Drugs are, by their very nature, foreign agents. As such, they affect your body in unnatural ways. The most common side effects of drugs prescribed to people managing diabetes are weight gain, gastrointestinal upset, and, sometimes serious liver problems. But that’s not all. In early studies, one diabetes drug in particular (Avandia) was demonstrated to more than double the death rate from heart attack or stroke!

In contrast, thousands of diabetic patients have learned how to manage diabetes with natural treatments, including special supplements for diabetes, easy to prepare recipes for diabetes, and other easily implemented lifestyle changes. Drugs should be resorted to only after safe, alternative have been given a sincere try. And remember, supplements and nutritional elements will not only support your blood glucose and blood sugar health, but unlike any drug, they will also improve your overall health. 5

As we see, there are many advances in the treatment of Diabetes and yet the condition of the people gets worse. Therefore, diabetes still remains a major cause of ill health and mortality. In India, around 20 million people are affected by Diabetes, and the numbers are getting worse. However, natural approaches to managing Diabetes are significantly healing.

Diabetes viewed form an Ayurvedic Perspective

In India, Diabetes has been known since the Vedic period. About 3 thousand years ago the Ayurvedic physician Charaka recognized and described it in the sixth chapter of the Charaka Samhita as a sweet tasting substance found in urine, which occurs frequently. In the Vedic period it was called *Prameha*, which means excessive urination. Another terms that described Diabetes was the term *Madhumeha* or the flow of sugar from the body. In addition, Diabites was also called Maharoga or a major disease because this health condition affects the whole physiology of the human. It also disturbs the five sheaths in the astral body such annamaya kosha, the food sheat, pranamaya kosha, the energy sheath, manomaya kosha, the mind sheath, vijnana maya kosha, the intellectual sheat, and anandamaya kosha, the bliss sheath. Therefore, we can say that Diabites affects the body, mind, and spirit of a human. Therefore, this explains the intensity by which diabetes silently affects our whole being and destroys our tissues one by one. 6

In connection with modern medical and ancient Ayurvedic knowledge, the major signs and symptoms of Type II Diabetes are consistent in both traditions. For example Ayurveda also speaks of strong thirst, frequent urination, obesity, constipation, burning sensation on the skin, seizures, insomnia, and numbness in the body. Also the inability of the body to heal fast and the occurrence of boils, wounds, and abscesses were known to Ayurveda as well. Another aspect was that diabetes was considered as an outcome of a lifestyle that could be classified with attributes such as lethargy, laziness, unhealthy diet, and overweight. Furthermore Ayurveda also divided Prameha into two types: One was the lean Diabetic called *Krishna Pramehi* and

the obese Diabetes classified as *Sthula Premehi*. This reminds us of the Type I and Type II Diabetes.⁷

However, there are 20 different forms of the metabolic disorder Prameha in reference to the three doshas. In this context, Dr. Vasant Lad says the following:

*“Prameha is a metabolic disorder of agni, the energy of transformation. The stomach is the seat of jathrar agni, which is the central bodily fire; the liver the seat of bhuta agni; the pancreas the has kloma agni; and each dhatu (tissue) has its own agni. When there is a dysfunction of these agnis, especially kloma agni, the carbohydrate metabolism is disturbed.”*⁸

Prameha is therefore a very complex disorder and Diabetes is one of them. Dr. Lad explains that Prameha is caused when the pancreas does not produce enough insulin. It leads to a chronic metabolic disorder in which carbohydrates cannot be digested well. Furthermore, it also affects the fat and water-electrolyte balance. The consequences of this condition are structural and functional changes in all tissues and organs.⁹

Ayurveda views Prameha in the light of the dosha involved. There are 10 types of Kapha Prameha, six types of Pitta Prameha, and 4 types of Vata Prameha.

Kapha Prameha can be easily cured and refer to non-insulin-dependent individuals.

Pitta Prameha are difficult to cure and may be non-insulin independent people.

Vata Prameha is incurable or very difficult to treat. This refers to insulin dependent individuals.

The main sub-division is based in Kapha dosha because an unhealthy lifestyle, with a lack of exercise, excessive sleep, too much stress, and an unhealthy diet build ama and aggravate the digestive system and Kapha dosha. Dr. Lad further explains:

“In prameha, there is a disturbance in ambu vaha srotas, mutra vaha srota, rasa vaha srota, rakta vaha srota, and medo vaha srota. The kloma (pancreas), talu (palate) and choroid plexuses are all connected to ambu vaha srota and are all affected by prameha. Medo vaha rotas (the channel of fatty tissue) an rasa-rakta vaha srotas (lymph and blood carrying chennels) are

affected by prameha due to their affinity for the water element. In fact, any system of tissue in the body that is associated with water will be affected.” 9

In another passage Dr. Lad further explains:

“The Ayurvedic picture is based on the concept that all dhatus (tissues) have a normal level of kleda (moisture or liquid). One function of kleda is to maintain the body’s water electrolyte balance. It also nourishes and lubricates all tissues. It is associated with kledaka kapha in the stomach and, in the prasara (spreading) stage of prameha, kledaka kapha overflows from the gastrointestinal (GI) track and enters the rasa dhatu (blood plasma). This kledaka kapha disturbs the kleda present in all dhatus. The function of the urine is to remove excess liquids, so when kleda is increased, urination is also increased, called polyuria.” 10

To sum up, we can conclude that prameha begins with a kapha imbalance that spreads throughout the body and mixes with medas. So Kapha mixes with fat and spreads on to the urinary system, which creates an imbalance there as well. Due to this condition, the body produces more mucous or fluids, which clog the internal pathways. When the other two doshas are also imbalanced, they contribute to this situation as well. If this condition is not treated, then it would lead to the creation of more ama, malas, and this would reduce ojas. This would lead to an array of pathologies that would finally destroy the whole body.

Treating Prameha

When treating Prameha, we have to consider the different types of prameha and treat them accordingly. From the twenty sub categories of Prameha, the three sub-divisions Kaphaja, Pittaja, and Vataja, each have distinctive qualities:

Kaphaja leads to indigestion, colds with runny nose, vomiting, loss of appetite, excessive sleep, weight gain, edema...

Pittaja causes a burning sensation, thirst, acidity, diarrhea, anxiety, stress, pain in the bladder and the urinary tract, pain in testes, and fever.

Vataja causes tremors, insomnia, pain in joints and muscles, difficulty breathing, constipation, and all these conditions cause a wasting away of the tissues.

Therefore, the whole treatment has to be holistic. There has to be a healthy combination of regular exercise and/or yoga; a healthy diet that suits the individual dosha, a lifestyle that does not cause too much stress but one that a person can manage and be happy and healthy with. In addition, it is necessary to keep hygiene and implement panchakarma or a gentler therapy that matches an individual's needs, constitution and type of prakriti the patient embodies. If required, a patient can also take allopathic medicine or insulin to manage Diabetes along with natural remedies. Herbs can greatly help manage and control Diabetes especially because they are not so harmful as allopathic medicine. The reason is that allopathic remedies often do not work after they have been taken for a while and the condition of the Diabetes gets worse instead of better. Herbal remedies help prevent this adverse effect

Herbs that alleviate or prevent Type II Diabetes:

Herbs have been used for managing Diabetes since ancient times. There are many herbs, however, some of the popular ones are turmeric, neem, amalaki, guggul, cinnamon, fenugreek, pterocarpus marsupium or the Indian kino, *Murraya koenigii* also called curry leaves. Apart from these herbs, vegetables such as bitter melon and *Moringa oleifera* help control diabetes.

Turmeric



Picture 1
Turmeric plant flower

Turmeric is the yellow spice that you find in curry. Botanically, the plant is called "*Curcuma Longa*", a perennial plant with smooth, unicolor green leaves, with white and yellow flowers that occur several at a time. The root is deeply yellow. Turmeric belongs to the ginger family and is also called *Saffron Ginger*. It originates from Southern Asia. **11**

Turmeric has many different bioactive compounds that have several medicinal properties such as: Curcuminoid with the active ingredient curcumin, which has a very potent inflammatory effect, and it is also an antioxidant. Turmeric has also shown to cut down fat, which helps to combat obesity, a problem that challenges Type II Diabetics.



Picture 2 Turmeric plant leaves



Picture 3 Turmeric Root

Reseachers from the Columbia University Medical Center discovered that curcumine could considerably decrease insulin resistance and prevent Typ II Diabetes. In addition, curcumin also cuts down fat tissues and had an inflammatory effect. **12**

Another study from the journal *Nutrition* 2011, reported that the blood of people who ate a meal containing lots of turmeric and other spices showed low levels of triglycerides and insulin also when they ate a fatty meal. Furthermore, its antioxidant quality also showed a significant lowering effect in the blood sugar levels of the patients who ate turmeric. **13**

Turmeric helps prevent many chronic diseases, such as diabetes, heart disease, and cancer. It promotes liver health and fat loss, purifies the blood, aids the stomach, colon, and the digestive system. It also supports the health of the lungs and the nervous system. Turmeric balances Vata, Pitta and Kapha dosha. It has a mild aroma that smells like of a mixture of orange and ginger, and its flavor is pungent and bitter. Therefore, it is very good for Kapha and Vata dosha. When heated with some oil the bitter taste diminishes. Since turmeric balances blood sugar levels and also reduces cholesterol, it is a spice that should be consumed regularly by diabetic patients.

Amla



Picture 4 – Amla fruit

Amla, the Indian Gooseberry grows on a small leafy tree, which grows in India. Its taste is sour. It is very highly valued because of its high amounts of vitamin C and also due to the precious oil that can be extracted from its seeds and pulp. It is used for treating problems with the hair and scalp. Amla oil is prepared with dried amla fruits soaked in coconut oil, which makes a very health promoting and rejuvenating hair conditioner. **14**

In addition, amla has cooling and laxative properties. Therefore, it has been used to treat hemorrhage, diarrhea, dysentery, leucorrhea and atherosclerosis. Amla boosts the immune system, prevents infections, and is also used to make tonics especially because of its high vitamin C content. A recent comparative study on the effectiveness of Amla and traditional allopathic medicine to control Type II Diabetes proved that only 3 grams of Amla powder was enough to bring down blood sugar levels more effectively than prescription medications. **15**

However, if one takes prescription drugs and Amla it would be important to monitor one's blood sugar levels so that one does not become hypoglycemic. Of course life style, diet, and exercise also contribute to healthy blood sugar levels. Nevertheless, Amla may be helpful for controlling blood sugar levels especially because it does not have harsh adverse effects as prescription drugs do. Furthermore, our body becomes resistant to the chemical drugs, and the condition gets worse and people feel the need to increase their drug consumption, which harms many organs.

Amla is sweet and sour in taste and is good for all doshas especially pitta because of its cooling effect on the body. It rejuvenates all body tissues, and this helps build ojas. Therefore, Amla is an anti-aging fruit and so to say an elixir for youthfulness.

Fenugreek



Picture 5 – Fenugreek leaves



Picture 6 – Fenugreek seeds

Fenugreek is known by different names: In Hindi it is called “Methi”, German “*Bockshornsamen*”, and other name are “*Bird’s foot*”, or “*Greek Hayseed*”. Its scientific name is *Trigonella Foenum-Graecum*. Both seeds and leaves are used in Indian cuisine. Fenugreek tastes bitter and has a strong flavor. **16**

In Ayurvedic medicine, fenugreek is used because of its varied qualities as a: laxative, demulcent, LDL cholesterol reducer, inflammation reducer, stimulant for lactation, expeller of worms out of the body, stabilizer of the gastrointestinal tract. Due to its hypocholesterolemic, hypolipidemic, hypoglycemic properties, it is used to treat and control Type II Diabetes as well. **17**

Fenugreek is similar to Cinnamon because of its blood sugar reducing quality. Dr. Keith Scott, MD reports in the journal on Home, Health and Nutrition that Fenugreek reduces the cellular resistance to insulin and therefore prevents or controls Type II Diabetes by 46%. **18**

In the same article, Dr. Scott also mentions that fenugreek raises the antioxidant compounds and their activity. In addition it reduces the oxidation of lipids, which would be otherwise very harmful for diabetic patients.

Furthermore, the distinctive quality of fenugreek as a dietary fiber is that it modifies and controls elevated blood glucose levels after meals because it delays the absorption of sugar in the intestinal tract. Apart from that, fenugreek also reduces the absorption of fat and cholesterol from the intestine. In addition, it controls and protects humans from developing heart disease and gaining weight. **19**

Medical studies, in terms of fighting Type II Diabetes, have shown that fenugreek is not only as good as Cinnamon and other spices, but even better because of its affects as an antioxidant, antifungal, analgesic, anti-fungal agent, effective nutrient against hepatitis, and also because of numerous other beneficial physiological effects that aid the control of various complicated caused by Type II Diabetes.

Fenugreek balances Vata and Kapha dosha. Owing to its warm quality, it helps Vata flow downwards. Its bitter taste helps reduce Kapha dosha. However, it can aggravate the agni in Pitta dosh and therefore should be used sparingly.

Since other spices also offer very valuable bioactive compounds, it is good to combine fenugreek with other spices because these combinations enhance the quality of fenugreek and help balance blood sugar levels in patients with any of the dosha. The use of fenugreek or other spices should be used according to the doshic tolerance level of a patient.

Black Cumin
Bunium Persicum



Picture 7 :
Black Cumin Seeds

Bunium Persicum or Black Cumin seeds have the same shape as cumin seeds, but they are much darker and thinner. Black cumin is very aromatic and somewhat piney and not so earthy. Therefore the flavor is like pine, astringent, and very bitter.

Bunium Persicum belongs to the Apicacea family, which refers to the Parsley family growing in dry temperature of Jammu and Kashmir, Himachal Pradesh, Afghanistan, and Iran. This grassy and perennial plant produces white and pink flowers. However, black cumin is often confused with another herb called Kolonji or *Nigella*, which is often referred to black cumin as well although they are two different herbs. **20**

Black cumin seeds are highly fragrant, and rich in essential oil that is consumed like a condiment. In the indigenous medicine system of Northern India, it is considered as a stimulant. If the seeds are crushed and taken with water, they have a carminative effect, curing indigestion and diarrhea. The extract of *Bunium Persicum* has bio components that reduce hyperglycemia and can prevent diabetes and obesity. **21**

Medical research has confirmed that *Bunium persicum* or black cumin effectively improves the lipid levels. **22** A reduction of LDL cholesterol would also improve the cardiovascular health, which patients with Type II Diabetes suffer from.

According to a study published by Journal of Pharmaceutical Sciences in Pakistan in July, 2010, *Bunium persicum* does not only reduce LDL cholesterol and obesity, but is also an anti-inflammatory, an analgesic, an anti-spasmodic, a carminative, and a lactation stimulant. All these qualities are challenged by Type II Diabetes, which raises the value of *Bunium persicum*. **23**

In addition, *Bunium persicum* also protects against brain disease which diabetic patients often experience. This can especially be the case if patients have had Diabetes for more than 20 year and could never really control it. Lab texts have shown that the black cumin reduces the speed of the chemicals that induce oxidative stress. This protects the structures of the brain and cranium.

However, black seed has shown to reduce the effectiveness of allopathic hypertension medicine when black cumin is taken in high amounts. **24**

Since Black Cumin is tridoshic, it pacifies Vata, Pitta, and Kapha dosha.

Curry Leaf

Murraya Koenigii



Picture 8 – Curry leaves

This is a broad leaf evergreen that grows in the jungles of India, Srilanka and in South Asia. Its common name is *Curry leaf*, or *Curry Patta* in Hindi, and the botanical name is *Murraya Koenigii*.

25

The *Murraya Koenigii* can grow up to 6 meters high. The leaves and its white flowers are very fragrant. In South Indian cuisine, they are very popular. Fresh leaves are snipped off and added to curries to enhance a dish with a gentle yet distinctive aroma.

Curry leaves have been used in traditional medicine because of their medicinal properties. The leaves have been valued for their quality as stimulants and anti-dysentery agents. They also raise the appetite, improve digestion, and lower blood sugar levels of diabetes mellitus. The root and bark of the *Murraya Koenigii* plant are carminative and a stomach tonic.

Curry leaves have many medicinal bio components: a steam distillate of the leaves can be used against stomach disorders, or as purgative, fever reducer, and also as an anti-anemic. **26** The leaves can also be applied externally on bruises and eruptions, acne, hives. Furthermore, they can also be crushed to a paste and mixed with a little turmeric. This paste can be applied on to the skin to heal skin problems. It has to be done for a few day until new healthy skin grows. **27** The leaves and roots are bitter and pungent. They are cooling, analgesic, and can expel parasitic worms. The leaves also cure piles, and alleviate heat in the body, and reduce thirst, inflammation, burns, and itching. Medical studies have also shown that curry leaves also help control blood disorders and Leucoderma. An infusion of dry roasted leaves helps against vomiting. Juice made of the roots of the curry leaf plant help alleviate kidney pain.

Curry leaves can also help reduce LDL Cholesterol levels. For this you eat a few fresh curry leaves in the morning on empty stomach. Therefore, curry leaves also help reduce weight. **28** Curry leaves also reduce hair loss, dandruff, and prevent premature hair greying. For this you boil curry leaves, along with hibiscus flower and basil in coconut oil. When the leaves turn brown you take the oil from the heat and apply the cooled oil to the hair, massage the scalp gently, and then wash the hair.

Medical studies and testing have shown that curry leaves have phytochemicals that inhibit the enzyme alpha-amylase present in the human pancreas. This enzyme breaks down starch in the small intestine, and its inhibition can help control blood sugar levels in patients with Type II Diabetes. According to a clinical study published in the Journal “Plant Food for Human Nutrition”, diabetic patients can reduce their fasting and post-meal blood sugar levels if they take about 12 grams of powdered curry leaves daily for a month. After 15 days, the first results can be observed. This remedy lowers the blood sugar levels but does not heal diabetes. **29**

The wide array of medicinal properties inherent in curry leaves shows that they can all benefit Diabetes Mellitus, which affects all body systems. The fact that curry leaves stimulate the carbohydrate metabolism is very helpful for diabetic patients who have a hard time digesting carbs. In this context, Daniel Hall, Ph.D., a researcher in the field of health disparity reduction through behavioral change, refers to a study from the “International Journal of Biological Chemistry” confirming that curry leaves help reestablish the health of the liver and kidneys, which rekindles their enzymes to metabolize carbohydrates in healthy ways. **30**

Curry leaves balance all three doshas: They help alleviate digestive problems, purify the blood, which would eliminate ama and balance kapha dosha. Since curry leaves have a positive effect on skin disorders, hives, reduce inflammation and fever, and have a cooling effect on our body, pitta dosha would also be balanced. On the other hand Vata imbalances that cause pain can be alleviated as well.

The Drumstick Tree
Moringa Oleifera



Picture 9
Drumstick
Tree

The Moringa Oleifera tree is a native to the sub-Himalian regions in India, Pakistan, Bangladesh, and Afghanistan. It belongs to the Moringaceae family and also grows in other tropical regions of the world.

In India, the British named it the *Drumstick Tree* because it produces a vegetable that looks like a drumstick.



Picture 10
Moringa leaves

The Moringa plant has a multitude of health benefits. One can say that practically all parts of this tree are beneficial: The leaves, bark, flowers, fruits, seeds, and also the roots are rich in phytonutrients that are highly medicinal.

Moringa alleviates stomach problems, allergies and edema. As an antioxidant, it protects the liver, eyes, heart, bones, hair, skin, and bladder. In addition, it also reduces elevated blood sugar and blood pressure levels, regulates fluid retention, alleviates thyroid disorders, asthma, anemia, obesity, nephrotoxicity, fights bacteria, viruses, fungi, parasites, and boosts the immune system. **31**

Moringa is also used as an aphrodisiac, and can increase the production of breast milk. It works like a tonic because it nourishes a patient who has malnutrition. **32**

The following table has been taken from the E-book “All things Moringa” by Hakim H.Y. Bey. The table shows vitamins and minerals contained in the Moringa leaves. The figures in the chart refer to 100 grams of edible leaves. **33**

	Fresh Leaves	Dried Leaves
<i>Vitamin A</i>	6.78 mg	18.9 mg
<i>Thiamin (B1)</i>	0.06 mg	2.64 mg
<i>Riboflavin (B2)</i>	0.05 mg	20.5 mg
<i>Niacin (B3)</i>	0.8 mg	8.2mg
<i>Vitamin C</i>	220 mg	17.3 mg
<i>Calcium</i>	440 mg	2,003 mg
<i>Calories</i>	92 calories	205 calories
<i>Carbohydrates</i>	12.5 g	38.2 g
<i>Cooper</i>	0.07 g	0.57g
<i>Fat</i>	1.70g	2.3 g
<i>Fiber</i>	0.90g	19.2 g
<i>Iron</i>	0.85 mg	28.2 g
<i>Magnesium</i>	42 mg	368 mg
<i>Phosphorus</i>	70 mg	204 mg
<i>Potassium</i>	259 mg	1,324 mg
<i>Protein</i>	6.70 g	27.1 g
<i>Zinc</i>	0.16 mg	3.29 mg

The amount of amino acids contained in Moringa leaves

<i>Arginine</i>	406.6 mg	1,325 mg
<i>Histidine</i>	149.8 mg	613 mg
<i>Isoleucine</i>	299.6 mg	825 mg
<i>Leucine</i>	492.2 mg	1,950 mg
<i>Lycine</i>	342.4 mg	1,325 mg
<i>Methionine</i>	117.7 mg	350 mg
<i>Phenylalnine</i>	310.3 mg	1,388 mg
<i>Threonine</i>	117.7 mg	1,188 mg
<i>Tryptophan</i>	107 mg	425 mg
<i>Valine</i>	374,5 mg	1,188 mg



Picture 11
Moringa Flower



Picture 12
Drumstick

The positive effects of Moringa on Type II Diabetes is obvious because of the wealth of healthy phyto-components contained in the Moringa plant.

Since Diabetes Mellitus affects all body systems and silently destroys each one, eating Moringa leaves or the drumsticks builds ojas and alleviates imbalances in the doshas. This improves the immune system, rejuvenates all the organs in the body, and promotes health and wellness. In addition the benefits of Moringa has a positive effect on the mind as well because Moringa improves the physiological functions. Apart from that, being happy is an important component for retaining health.

On the left hand side above, you see the Moringa flowers, which kind of look like miniature orchids. They are also edible and contain lot of iron.

Picture 12 shows a drumstick hanging down a the Moringa tree.

Conclusion

We can all agree that good health promotes happiness while disorder causes unhappiness. Therefore, we are truly happy when our whole being is in balance.

The Western and Ayurvedic ways of viewing Diabetes Mellitus are both valuable. Modern medicine views Diabetes from a biological and molecular level and breaks down all body functions accordingly, but then treats parts of the problem but not the whole condition.

For me, at first it was very interesting to view diabetes from such a perspective because it helped me consider functional disruptions of our physiology individually, and I feel this method can simplify our view of the problem. After all, modern medicine tends to separate our body, mind, soul, and our connection to our environment, and views all components individually. In the initial stage, it may be good to take things apart, but then we need to understand how to put it all together again.

After comparing diabetes from the Western and Ayurvedic perspective, I realized that modern medicine fights an illness while Ayurveda does not fight. In a way, it is a peaceful medicine, which seeks the restoration of health in the whole body. So, diabetes is viewed in connection with all the factors that affect a patient's well-being, such as life style, nutrition, exercise, relaxation etc. Although I knew that Ayurveda has a holistic approach to solving the problem, this time I was struck by the nature of the two disciplines of medicine and their way of viewing a condition and the solutions each offers.

I also realized that when we look at parts of a problem and never put all the components together that affect the whole condition, then we cannot really come up with solutions that bring about balance and harmony in the body. Consequently, this method of healing would not ensure a patient's feeling of happiness and well-being in life, because there are always parts of the problem that are left neglected. Healing affects our own body and being and not just a part.

When I discussed the healing attributes of plants, I realized the manifestation of goodness, harmony, and love, which is a cosmic principle. Nature freely gives away what it has, and it never fails in this endeavor. It is all about being good and offering goodness.

It became clear to me that this is our goal too: When we are in harmony, we are healthy, energetic, free to realize our true being, and able to help other. This is what I learned from the plants and their qualities. To me they are a symbol of happiness, harmony, and wellbeing, which is also the attribute of our true nature. It is our dharma.

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Photos:

Except for photograph number 4 showing the *amla* fruit, I have photographed all of the plants shown in this paper as they grow in my garden. Picture 4 has been taken from Google images.