

INTEGRATIVE MEDICINE THERAPIES USING NATURAL REMEDIES IN THE MANAGEMENT
OF TYPE 2 DIABETES

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ABSTRACT

Diabetes is a chronic fatigue syndrome that happen again when the pancreas does not construct sufficient insulin or when the body cannot constructively use the insulin that it produces. Diabetes and its complications are leading causes of death worldwide, the increased percentage of death worldwide. Type 2 diabetes generally caused by eating wrong foods, lack of sleep, mental stress, toxins, and genetics. Patients with type 2 diabetes look towards natural medicine in addition to their conventional medicine for help in treating their disease. Natural medicines and using food as medicine is a great way to balance your diabetes treatment. In present article, we have covered information about integrative medicine therapies using natural remedies in the management in type 2 diabetes (diabetes mellitus).

Keywords – Type 2 Diabetes; Diabetes Mellitus; Insulin; Diet.

1. INTRODUCTION

Diabetes is a chronic fatigue syndrome that happen again when the pancreas does not construct sufficient insulin or when the body cannot constructively use the insulin that it produces. There are four types of diabetes viz. type 1 diabetes, type 2 diabetes, secondary diabetes and gestational diabetes. Diabetes and its complications are leading causes of death worldwide, the increased percentage of death worldwide [1].

2. TYPE 2 DIABETES (DIABETES MELLITUS)

Type 2 is the most common type of diabetes. It is a lifelong disease that keeps your body from using insulin the way it should. Community with type 2 diabetes are said to have insulin resistance. It also affects kids and teens, mainly because of childhood obesity. Globally, an estimated 46.2 crore people are affected by type 2 diabetes, corresponding to 6.28% of the world's population (Table 1). More than 1 million deaths were attributed to this condition in 2017 alone, ranking it as the ninth leading cause of mortality [2].

3. ROLE OF GLUCOSE

Glucose, a sugar is a source of energy for the cells that make up muscles and other tissues. Glucose comes from two major sources: food and your liver. Sugar is absorbed into the bloodstream, where it enters cells with the help of insulin. Your liver stores and makes glucose. When your glucose levels are low, such as when you haven't eaten in a while, the liver breaks down stored glycogen into glucose to keep your glucose level within a normal range [3].

3. CAUSES OF TYPE 2 DIABETES

Your pancreas makes a hormone called insulin. It helps your cells turn glucose, a type of sugar, from the food you eat into energy. People with type 2 diabetes make insulin, but their cells don't use it as well as they should. At first, your pancreas makes more insulin to try to get glucose into your cells. But eventually, it can't keep up, and the glucose builds up in your blood instead. Usually, a combination of things causes type 2 diabetes. They include [4].

3.1. Genes

Scientists have found different bits of DNA that affect how your body makes insulin.

3.2. Extra weight

The fatter tissue you have, the more resistant your cells become to insulin. Being overweight or obese can cause insulin resistance, especially if you carry your extra pounds around your middle.

3.2. Metabolic syndrome

People with insulin resistance often have a group of conditions including high blood sugar, extra fat around the waist, high blood pressure, and high cholesterol and triglycerides.

3.3. Higher glucose from liver

When your blood sugar is low, your liver makes and sends out glucose. After you eat, your blood sugar goes up, and your liver will usually slow down and store its glucose for later. But some people's livers don't. They keep cranking out sugar.

3.4. Bad communication between cells

Sometimes, cells send the wrong signals or don't pick up messages correctly. When these problems affect how your cells make and use insulin or glucose, a chain reaction can lead to diabetes.

3.5. Broken beta cells

If the cells that make insulin send out the wrong amount of insulin at the wrong time, your blood sugar gets thrown off. High blood sugar can damage these cells, too.

3.6. Inactivity

Physical activity helps you control your weight, uses up glucose as energy and makes your cells more sensitive to insulin.

3.7. Family history

Your risk increases if a parent or sibling has type 2 diabetes.

4. SYMPTOMS

The symptoms [5] of type 2 are:

- Very thirsty
- Blurry vision
- Cranky
- Tingling or numbness in your hands or feet
- Feeling hungry
- Weight loss without trying
- Getting more infections
- Yeast infections that keep coming back, etc.

5. INTEGRATIVE MEDICINE THERAPIES USING NATURAL REMEDIES

Natural remedies for type 2 diabetes.

5.1. Apple Cider Vinegar

The primary compound in ACV is acetic acid and is believed to be responsible for many of its health benefits. Taking 2 tablespoons before bedtime can reduce your morning fasting sugar levels.

5.2. Fiber and Barley

Eating fiber decreases blood sugar and insulin concentrations. The recommended amount of fiber is around 30 gm per day. Most Americans get around 6-8 gm, which is not nearly enough. High-fiber, high-protein grain which has lots of data to support its role in helping improve blood sugar, insulin, cholesterol and general inflammation.

5.3. Chromium

Mainly found in brewer's yeast, deficiency in chromium impairs the metabolism of glucose. Evidence supports chromium for lower blood sugar and A1c levels.

5.4. Zinc

Those with diabetes are commonly found to be zinc deficient. Studies have shown zinc supplementation can reduce blood sugar and A1C, have an antioxidant effect, lower blood sugar and even help treat some of the complications related to diabetes. Large doses of zinc can inhibit the absorption of other minerals like copper, so be sure to ask for guidance of the appropriate dosing.

5.5. Aloe Vera

The sap of *aloe vera* is known for its laxative effect. Therefore, make sure to get the juice of the gel. There is increasing evidence for use of the gel, which is the mucilaginous material inside the leaves. Be sure that any product you buy is free of aloin or anthraquinones to avoid finding yourself in the bathroom.

5.6. Berberine

This is one of my all-time favorite botanicals found in plants such as goldenseal, barberry, Oregon grape root and Coptis. Current evidence supports its use for decreasing blood sugar and hba1c. Be aware that this herb can interfere with metabolism of traditional pharmaceuticals and should never be taken while pregnant.

5.7. Cinnamon

A medically beneficial indulgence to help lower your blood sugar and cholesterol levels.

5.8. Fenugreek

A seed commonly used as a food spice has been used abroad for centuries for its medical benefits to lower cholesterol and hba1c. If your urine smells like maple syrup, not to worry, this is a known side effect and is harmless.

5.9. Gymnema

Used for centuries in India, evidence is catching up to its medical use showing benefits for glucose metabolism, insulin levels and as an adjunct to improve the results of traditional pharmaceuticals. Be aware, because this botanical works synergistically with your meds, you must monitor your blood sugar closely to avoid having hypoglycemia.

6. MEDICINAL PLANTS USED

Medicinal plants possessing therapeutic uses in diabetes and supported by clinical data or described in pharmacopoeias and well-established documents [6].

6.1. *Allium cepa*

The parts (Fig. 1) of the plant used are the fresh or dried bulbs, commonly known as onion, belonging to *Amaryllidaceae* which are commercially cultivated worldwide. *Allium cepa* is also known to have antioxidant and hypolipidemia occupation manage blood glucose as well as lipids in serum and tissues and normalized the operate of liver hexokinase.



Fig. 1: Bulbs of *Allium cepa*

6.2. *Azadirachta indica*

The plant (Fig. 2) shows anti-hyperglycemic activity in streptozotocin treated rats and this effect is because of enlarges in glucose uptake and glycogen deposition in secluded rat hemidiaphragm. Ethanol extract acquire from leaves indicate particular effect.



Fig. 2: Leaves of *Azadirachta indica*

6.3. *Momordica charantia*

Fruits of *Momordica charantia* (Fig. 3) administered type 2 diabetes patients (2000 mg/day), demonstrated a significant decrease in fructose amine levels after 4 week of treatment and no side effects were observed.



Fig. 3: Fruits of *Momordica charantia*.

6.4. *Ocimum tenuiflorum*

Leaves of plant (Fig. 4) determined a significant development in fasting blood glucose and in glucose sufferance and a correction of the abnormal lipid profile, through the depletion of serum total and LDL cholesterol levels. The supplementation with capsules (250 mg twice daily for 8 weeks) decreases plasma insulin and insulin opposition by 28.49% and 24.79%.



Fig. 4: Leaves of *Ocimum tenuiflorum*

6.5. *Rehmannia glutinosa*

The principal component of roots of plant (Fig. 5) are iridoid glycosides and monoterpenes and in streptozocin- prompt diabetic mice at 20, 40 and 80 mg/kg. The parts of the plant used are the dried roots and rhizomas. The protective effects of catalpol (20–120 mg/kg/day) between repression of AGE mediated inflammation have been hugely confirmed in animal models.



Fig. 5: Plant *Rehmannia glutinosa*

6.6. *Panax ginseng*

Preparations of roots have been applied to several habitual conditions such as hypodynamia, anorexia, shortness of breath, palpitation, insomnia, impotence, hemorrhage and diabetes.

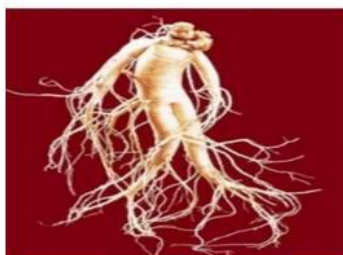


Fig. 6: Roots of *Panax ginseng*

6.7. *Trigonella foenum-graecum*

Leaves (Fig. 7) of plants are used. This drug contributes to a better glycemic control in type 2 diabetes mellitus patients, reducing fasting blood glucose, 2 h post load blood glucose and glycated haemoglobin. 4-Hydroxyisoleucine stimulates glucose-dependence on insulin secretion, decrease insulin defiance and discourage sucrose α -D-glucosidase and α -amylase.



Fig. 6: Roots of *Trigonella foenum-graecum*

7. STANDARDIZATION OF NATURAL REMEDIES

Standardization of natural remedies is usually done by various analytical methods. These methods are not only limited to standardization of herbal drugs or extracts thereof, but can also be used for various pharmaceutical preparations [7-13]. These methods include high performance thin layer chromatography, HPLC, UV-spectrophotometry, gas chromatography, etc. [14-28].

8. CONCLUSION

Thus Type 2 Diabetes (Diabetes Mellitus) can be effectively managed by integrative medicine therapies using natural remedies.

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10. DISCLOSURE OF CONFLICT OF INTEREST

The author declares no conflict of interest.

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