



## Original Research

### Diabetes dealt with GLVs & Homoeopathy

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#### Abstract:

A standard advice given by doctors to diabetic individuals is to have lots of vegetables & particularly the Green Vegetables (GV) & Green Leafy Vegetables (GLV). The aim is to replace the refined carbohydrates with vegetables in the usual diet. Numerous studies have suggested that eating vegetables before other foods in the meal helps lower post meal blood sugars. Hence, the golden rule should be to start the meal with leafy vegetables.

The current article reviews the current diabetic situation in the country & examines the same with the current vegetable consumption per day per individuals & the usual dieting patterns in populations. Simultaneously, it discusses on the various aspects of the benefits of vegetables & their role in diabetes in the body.

Finally, the article links the Homoeopathic system of medicine of the Ayurveda, Yoga & Naturopathy, Unani, Siddha, Homoeopathy & Sowa Rigpa (AYUSH) ministry through the medicines that are prepared from vegetables. Further, using the knowledge of Botany & the sources of these medicines, the article suggests a treatment protocol to deal with diabetes through the use of these medicines in various stages & complications of diabetes in diabetic individuals.

As the topic of diabetes & GLVs have been put forward as a new approach in diabetic care & various stakeholders being skeptical about the current therapeutic approach, it is significant to note that Homoeopathy is a time tested holistic & therapeutic approach that is cost effective, therapeutically active & without any side effects. Masses can be easily covered & the poor families can benefit from the application of Homoeopathy on a large scale. They can also relieve themselves through not only in relieving them from diabetes & its complications but also in palliative care in complicated diabetic individuals.

**Key Words:** Diabetes, T2DM, Green Vegetables (GV), Green Leafy Vegetables (GLV), Materia Medica, Botany, Miasms, Glucagon Like Peptide 1(GLP 1)



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## Introduction:

Diets should include edible parts of a plant such as the leaves, stem, roots & bulbs. Usually, fruits are sweet whereas vegetables are astringent in taste as per the six tastes of Ayurveda. The six essential tastes are Sweet, Sour, Salty, Pungent & Astringent. [1,2]

For the common man, the astringent taste falls in the category of salty & spicy taste. Several studies suggest that eating vegetables before other foods in the meal helps lower post meal blood sugars. Further, numerous studies mention that vegetables consumption before carbohydrate is a promising & simple method of diabetes diet that helps maintaining blood glucose & Glucagon Like Peptide 1 (GLP-1) levels & preventing from vascular complications. Therefore, it is a good strategy to start the meals with GLVs. [1,3]

Another meta-analysis study mentions that a higher intake of fruit, especially berries & GLVs, yellow vegetables, cruciferous vegetables or their fiber is associated with a lower risk of Type 2 diabetes. [4]

Leafy vegetables provide soluble & insoluble fibre, antioxidants, vitamins & minerals. They also contain a variety of beneficial substances as phytosterols (fats from plant sources like cholesterol from animal sources), flavonoids & other antioxidants that have anti-inflammatory properties. [4]

Vegetables have also a role in people with Type 2 diabetes. Carbohydrate content, portion size & the glycemic index determine the post meal glucose surge. Glycemic index is about the quality of food regarding how quickly a food raises the blood glucose in the body. The high fibre content in vegetables blunts post meal spikes & provides greater satiety despite being lower in calories than cereals. It also lends variety & flavor to the diet. No single vegetable provides all the properties & therefore it is prudent to include all varieties of vegetables in our diet. [4]

## About Vegetable Fibre:

The World Health Organization (WHO) suggests consuming more than 400 grams of vegetables per day to improve overall health & reduce the risk of

Non-Communicable Diseases. It is critical to note that the vegetable consumption in India is not even close to the recommended levels. The average consumption of fibre per day in India is only 150 grams per day. [1,5,6]

Dietary fibre is the name given collectively to undigestible carbohydrates present in foods. These carbohydrates are not chemically well defined but together with lignin consist of cellulose, hemicelluloses, pectin, plant gums & mucilages. Some of these are water soluble & others are water insoluble. The dietary fibre is not digested by the enzymes of the stomach & small intestine where most of the other carbohydrate like starch, sugars are digested & absorbed. The dietary fibre have the property of holding water & swell & behave like sponge as it passes through Gastro Intestinal tract. Fibre adds bulk to the diet & increases transit time in the gut. Some of the fibre may undergo fermentation in the colon. The fibres particularly the gums, pectins when ingested with a diet are reported to reduce post prandial glucose levels in blood. Studies have shown that gum present in Fenugreek seeds that contains 40% gum is most effective in reducing blood glucose & cholesterol levels as compared to other gums. [7]

Dietary fibre is a carbohydrate that is not digested & absorbed in the small intestine & so it passes into the large bowel as the main nutrient of the gut microbiota. Most of the dietary fibre is Non Starch Polysaccharides (NSP) plus some resistant dietary starch altered by cooking to escape hydrolysis in the small intestine. The many bacterial species which make up the colonic microbiota digest fibre to produce Short Chain Fatty Acids (SCFA) that are absorbed as fuel for the colonic epithelium & contribute to bowel health & also bioactive, stimulating hormones like Glucagon Like Peptide 1(GLP1) from colon 'H' cells. In infancy, some lactose in milk is not absorbed & serves the same functions.[8]

Some types of NSP, notably the hemicelluloses of wheat increase the water holding capacity of the colonic contents & the bulk of the faeces. Simple constipation is prevented, diverticulitis is also prevented & the risk of colon cancer is also

reduced. Viscous dietary fibres like pectin & guar gum delay glucose absorption there by reducing glycemic index, reduce bile salt absorption & hence reduce plasma cholesterol concentration.[8]

### **Benefits of Vegetables:**

Among vegetables, fibre rich vegetables should be consumed by diabetics as these vegetables are also rich in a variety of vitamins, minerals & antioxidants. Out of these antioxidants, some antioxidants have specific benefits for diabetic people & especially for Type 2 diabetes. These antioxidants are Alpha Lipoic Acid (ALA) that are found in plenty in GLVs such as Kale & Spinach. The other anti oxidant is N-Acetyl Cysteine (NAC) that are found in plenty in vegetables like Onion & Garlic which are the Allium vegetables. The citrus fruits like Amla, Lemons & Oranges have plenty of Vitamin C or Ascorbic acid. The other Ascorbic acid rich vegetables are Red & Green peppers, Strawberries & Brocoli. Vegetables that are rich in Nitrates which help reduce blood pressure should also be a part of the diet. These Nitrate rich vegetables are Rocket leaves, Beetroot, Lettuce, Celery & Radish. [1,7,8,9,10,11]

Plant sources of protein include Tofu, Chickpeas & Peanuts. It is to be noted that vegetables like Watercress or Jalkumbhi, Alfalfa Sprouts, Spinach, Asparagus, Mustard Greens or Sarson Saag, Collard greens or Haak Saag, Brocoli, Brussels Sprouts, Radish Leaves or Mooli Saag & Cauliflower are protein rich. All these vegetables contain between 2 & 4 grams of protein per 100 grams. [1,7,8,9,10,11]

### **Gut Microbiome & Vegetables:**

The gut microbiome has an important role in the metabolism of carbohydrates & fats that can influence the body's ability to regulate blood sugar levels. The first study on gut microbiota in human adults with Type 2 diabetes reflected that the gut microbiota of diabetics differs from non diabetic adults in 2010. [12,14] Another study elicited that the abundance of class Clostridia & Phylum Firmicutes in T2DM patients considerably declined while the level of class Beta Proteobacteria was highly increased & positively associated with plasma glucose. A decrease in

Butyrate producing bacteria such as Faecali bacterium & Roseburia & reduction of Butyrate are common in T2DM. The study also cites that this may be the principal cause of T2DM.[13,14]

Other studies have found that individuals with Type 2 diabetes have a less diverse & less balanced gut microbiome compared to healthy individuals. The fibre from leafy vegetables that we eat provides food for the bacteria in our gut. These fibres are indigestible by humans but are easily broken down easily by the gut friendly bacteria that help them to reproduce. This process thus balances our microbiome. In order to have a healthy gut, the best vegetables are Spinach, Okra/Bhindi/Lady's Finger, Garlic, Onion, Mushroom, Bok Choy, Arugula, Cabbage & Cauliflower. [1,7,8,9,10,11]

### **Next Steps:**

We all should aim to fill about half a plate at each meal with Non Starchy vegetables like Spinach, Cucumber, EggPlant/ Brinjal, Radish & Brocoli. Similarly, Starchy vegetables like Peas, Corns, Potatoes, Sweet Potatoes contain vitamins, minerals, nutrients & fibre. It is to be noted that these vegetables are also higher in carbohydrates than the non starchy vegetables. It is also to be noted that raw vegetables have more fibre than cooked or processed vegetables. On deep frying the vegetables or making them a part of a spicy curry their beneficial properties are lost. Ideally, our eating plate should have a quarter of Roti/Chappati/Flat Bread or Chawal/Rice & at least half part vegetables including the raw vegetables. The other quarter should have fats & pulses. [1,7,8,9,10,11]

### **Homoeopathic Approach:**

The first approach of Homoeopathy is the miasmatic approach. When the hypoglycemic diathesis/indisposition starts with in the body, the miasmatic affection in the body is 'Psoric' as the disorder is at the functional level. When the sugar levels increase unnecessarily in the body and forms new cells inside the body as a protective phenomenon, the miasmatic affection is 'Sycotic'. When the sugar spreads to other parts of the body & destroys cells & tissues, the miasmatic affection is 'Sycotic'. Here, the homoeopath has to prescribe

anti miasmatic medicines depending upon the prevalent miasm in the body. [15-24]

The main reference books that the article considers are the 'Concise Repertory of Homoeopathic Medicines' by Dr. Shankar Raghunath Phatak (1896-1981), M.B.B.S. who practiced Homoeopathy in Pune, Maharashtra. He did his Medical Graduation from Grant Medical College, Mumbai. The other reference book is the *Materia Medica* by Murphy [15,17]

The list of drugs from the *Materia Medica* with their common names from GV, GLV, Fruits & Spices are given. It has to be noted that the article only focuses on T2DM & hence the drugs are to be given in the Mother Tincture form only. This is a specific treatment protocol for diabetes using GV, GLV, fruits & spices. The homoeopath has to decide the Similimum, other indicated medicines & prescribe these medicines along with the Similimum.

Name of the drug in <i>Materia Medica</i>	Common Name
1. Agaricus Blazel Murril	Brazilian Mushroom
2. Agaricus Campestris	Mushroom
3. Agrostoma Githago	Corn Cockle
4. Medicago Sativa	Alalfa
5. Allium Cepa	Red Onion
6. Allium Sativa	Garlic
7. Arum Triphyllum	Indian Turnip
8. Asafoetida	Gum of the Stinksand
9. Asparagus Officinalis	Garden Asparagus
10. Atista Indica	Ban Nimbu
11. Avena Sativa	Oat
12. Beta Vulgaris	Beet Root
13. Capsicum Annum	Cayenne Pepper

14. Cedron	Rattle Snake Bean
15. Cinnamonum Cey	Cinnamonum tree
16. Citrus Decumana	Grape Fruit
17. Citrus Limon	Lemon
18. Citrus Vulgaris	Bitter Orange
19. Colocynthis	Bitter Cucumber
20. Curcuma Longa	Turmeric
21. Embelica Officinalis	Amla
22. Eucalyptus G	Blue Gum tree
23. Fagopyrum E	Buck Wheat
24. Gambogia Morella	Gummi Gutti
25. Inonotus O	Chaga Mushroom
26. Laurus Nobilis	Bay Leaf
27. Lycopersicum Esculentum	Tomato
28. Musa Sapientum	Banana
29. Moringa Olifera	Moringa Moringa
30. Nasturtium A	Water Cress
31. Persea A	Avocado
32. Piper Methysticum	Kava Kava
33. Phaseolus N	Dwarf Bean
34. Raphanus Sativus	Radish
35. Sinapis Alba	White Mustard
36. Solanum T	Potato
37. Sinapis Nigra	Black Mustard
38. Terminalia Chebula	Haritaki
39. Terminalia Batterica	Bibitaki
40. Tamarindus Indicus	Tamarind
41. Trigonella Foenum	Fenugreek
42. Zingiber O	Zingiber

**Burden of Diabetes in India****Table 1- Prevalence of Blood Sugar among adults in India (Source- NFHS 5, 2019-21) [28]**

Indicator	Gender	Urban	Rural	Total
Percentage of Women age 15 years and above who have high blood sugar level (141-160mg/dl)	Female	6.7	5.9	6.1
Percentage of Women age 15 years and above who have very high blood sugar level (>160mg/dl)	Female	8.0	5.5	6.3
Percentage of Women age 15 years and above who have high or very high blood sugar level(>140mg/dl) or taking medicine to control blood sugar level	Female	16.3	12.3	13.5
Percentage of Men age 15 years and above who have high blood sugar level (141-160mg/dl)	Male	7.8	7.0	7.3
Percentage of Men age 15 years and above who have very high blood sugar level (>160mg/dl)	Male	8.5	6.5	7.2
Percentage of Men age 15 years and above who have high or very high blood sugar level(>140mg/dl) or taking medicine to control blood sugar level	Male	17.9	14.5	15.6

This reflects the magnitude of the problem in the country from the perspective of Non Communicable Diseases (NCD) as diabetes is a metabolic disorder with an altered diet that is devoid of Green Vegetable (GV) & Green Leafy Vegetable (GLV) in the body. The data shows that males are more diabetic than females in India.[28]

Currently, the Crude Death Rate includes Non Communicable Diseases (NCD) deaths and this trend is catching up as NCDs have the upper hand than the Communicable Diseases (CD) as a result of epidemiological transition. Diabetes is one such NCD with an improper life style. [31]

In India, Homoeopathy is the third preferred system of treatment after Allopathy and Ayurveda. About 10% of the populations depend on Homoeopathy for their health issues.

Homoeopathy is used by 10% of the population in India. So, out of the 1300 million populations, 130 million use Homoeopathy or 130 million use Homoeopathy for their health issues. These 130 million consist of all age groups i.e. infant to old age. [29,30]

A section among the 15+ age group suffers from diabetes as per NFHS 5. Considering that, it is 2/3<sup>rd</sup> of the population in India (15-65+ year age group) or 100 crore or 1000 millions. Out of this 100 crores, 27% adults are diabetic or about 27 crores are diabetic. These people are at risk from the rest 73 crore. As 130 million use homoeopathy, 2/3<sup>rd</sup> of the users will be in 15-65+ year age group or 98 million. So if homoeopathy is integrated in to the diabetic battle in India, 98 million people can be saved from being complicated diabetic cases. Application of lifestyle concepts in homoeopathy will be a boon in this regard.[28,29,30,31]

**Conclusion:**

As all drugs in homoeopathy have a group of mental symptoms, Homoeopathy is and will be effective against metabolic disorders in general as these are induced by stress. The current article adds another feather in the Homoeopathic cap as it can deal with the probable upcoming of large number of cases of metabolic disorders as diabetes in view of high stress levels due to the ongoing COVID 19 crisis. However, it should be also seen that along

with constitutional/deep acting/polychrest homoeopathic medicines, specific medicines are also required to deal with the cases. Simultaneously, nutrition, counseling and all psychic health modalities like life style modification and stress reduction are adhered in each case. [25,26,27]

In fact, the detailed case taking of a case & empathetic hearing are the elements of supportive therapy as metabolic cases are chronic and resistant. The Homoeopathic approach of case-taking/anamnesis exactly fits into the criteria of supportive therapy. Hence, as a part of treatment, the supportive therapy is inherent in Homoeopathic treatment. Green leafy vegetables & nuts are to be added in the diet in order to enable the body to improve organ functions and liver is one such organ. The vegetarians should be supplemented with Vitamin B12 & Zinc supplements as these are good for metabolic health & diets of vegetarians lack these nutrients. The primary sources of these two supplements are sea food & non-vegetarian foods. [15-24]

The Homoeopathic fraternity should be ready to cover the masses as there is no other therapeutic system that can cover the masses effectively while being economical and cost effective. Simultaneously, it has a wide range of medicines as seen in the contents of the sections mentioned above. [25,26,27]

#### **Declaration of the lead author:**

Prof. Shankar Das, a co-author of the current article was the Ph.D. guide of the lead author at Tata Institute of Social Sciences, Mumbai. Prof. D.P. Singh was the teacher of the lead author at TISS, Mumbai during 1995-1997. The lead author also certifies that he has expressed his personal opinion based upon his public health and clinical experiences. The treatment approach or the medicines suggested are only suggestive in nature.

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Nil

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