World Journal of Pharmaceutical Science and Research
www.wjpsronline.com
Review Article
ISSN: 2583-6579
SJIF Impact Factor: 5.111
Year - 2025
Volume: 4; Issue: 5
Page: 419-427

MANAGING GLYCEMIC INDEX (GI) THROUGH AYURVEDA

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Article Received: 26 August 2025 | | Article Revised: 16 September 2025 | | Article Accepted: 7 October 2025

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DOI: https://doi.org/10.5281/zenodo.17369513

How to cite this Article: Dr. Archana Pandurang Kashid -Zende (2025) MANAGING GLYCEMIC INDEX (GI) THROUGH AYURVEDA. World Journal of Pharmaceutical Science and Research, 4(5), 419-427. https://doi.org/10.5281/zenodo.17369513

ABSTRACT

The Glycemic index (GI) is a scale that ranks the number of carbohydrates in foods from zero to 100, indicating how quickly a food causes a person's blood sugar to rise. The glycemic index is a scale that ranks the number of carbohydrates in foods from zero to 100, indicating how quickly a food causes a person's blood sugar to rise. Dietary therapy/Pathya is the primary treatment for the prevention and management of Prameha, Obesity and its Complications.Ayurveda manages the glycemic index (GI) holistically by focusing on diet, lifestyle, herbal remedies, and therapies to address metabolic imbalances. GI Index helps in controlling the blood sugar levels and is a key factor in diabetes management. According to Ayurveda classics the Tikta and kashaya rasatmaka vegetables are indicated as patthyakara ahara dravya in prameha. Diets in Ayurveda by Acharayas are studied & correlated to Low Glycemic Index Diets in modern concept

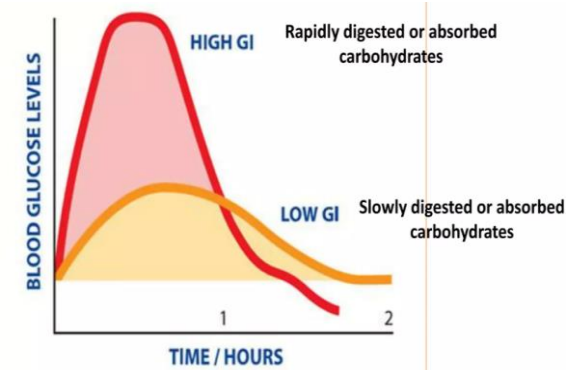
KEYWORDS: Glycemic index, Prameha, Blood sugar, Diet.

INTRODUCTION

Glycemic Index (GI): Concept & Understanding

Glycemic Index

Glycemic index is a measure of how quickly a food can make your blood sugar (glucose) raise.



The glycemic index(GI)Concept was developed in 1981 by Dr. David J. Jenkins and co-workers at the University of Toronto.The glycemic index is a scale that ranks the number of carbohydrates in foods from zero to 100, indicating how quickly a food causes a person's blood sugar to rise.

Application of Index

The GI provides information about how the body digests carbohydrates using a scoring system of zero to 100. Pure sugar has a score of 100.Ranking of Food items is based how fast, carbs releases Glucose in Blood Stream.

Low Glycemic Index Foods

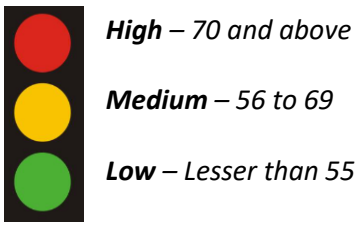
- Slowly digested and absorbed carbohydrates.
- Causes a slower and smaller rise in blood sugar level.

Medium Glycemic Index Foods

- Food that do not raise the blood sugar level as much as high GI foods but still affects the blood sugar levels

High Glycemic Index Foods

- Rapidly digested and absorbed carbohydrates.
- Causes a faster and higher rise in blood sugar levels.
- Often processed foods
- Lower in fiber.



Glycemic Index (GI): Affecting Factors & Evaluation

Understanding Process for Calculation of GI:

1. **Select a Standard**: Begin by selecting a food containing 50 grams of carbohydrates as the standard for comparison. This standard food is usually glucose or white bread (**Reference Food**).
2. **Test the Blood Sugar**: Feed the **Test Food** to a group of people after an overnight fast and measure their blood sugar levels over the next two hours at regular intervals.

3. **Calculate the Average**: Take the average of the blood sugar values obtained from all the participants and plot it on a graph against time.
4. **Compare the Curves**: Next, compare the blood sugar curve of the tested food with the curve of the standard food.
5. **Determine the GI**: The area under the two curves will help you calculate the GI of the food. The formula for GI calculation involves specific mathematical calculations based on these areas.

Factors those Impact Glycemic Index

Type of Starch

Some starches in food, like the ones in sticky rice are digested quickly, so they a higher GI. Starches like ones in wild rice are digested more slowly, so they have a lower GI.

Type of Sugar it contains

Some sugar increase the blood sugar levels higher than others, sugars, such as high fructose, corn syrup, found in soda, juice drinks and packaged and processed foods increase the GI.

How refined the carbohydrate is

Generally the more processed the food is, the higher its GI.

The ripeness of fruit

The riper the fruit, the higher the GI. Ripe bananas have higher GI than unripe bananas.

Ripe fruits can still be a part of healthy diet.

The cooking method

The longer a food is cooked, the faster its sugar is will be digested and absorbed, thus raising the GI.

The acid content

Adding acids like lemon juice, vinegar or home made tomato sauce to some food can help lower the GI.

The fat and protein

Fat and protein slow the rate of stomach emptying. Higher fat food such as lasagna, French fries, pizza or hamburgers are digested at a slower rate, triggering a lower GI.

Food Articles as per their Glycemic Index

Group	Range	Examples
Low	0 - 55	Fructose; pulses (black, pinto, kidney, lentil, peanut, chickpea); Small seeds (sunflower, flax, pumpkin, poppy, sesame, hemp); walnuts, cashews, most whole intact grains (durum/spelt / wheat, millet, oat, rye, rice, barley); most vegetables, most sweet fruits (peaches, strawberries, mangos); tagatose; mushrooms; chilis, unpeeled sweet potato.
Medium	56 – 69	White sugar or sucrose, not intact whole wheat or enriched wheat, pita bread, basmati rice, unpeeled white/yellow potato, grape juice, raisins, prunes, pumpernickel bread, cranberry juice, regular ice cream, banana, peeled sweet potato[
High	70 and above	Glucose (dextrose, grape sugar), high fructose corn syrup, white bread (only from wheat endosperm), most white rice (only from rice endosperm), corn flakes, extruded breakfast cereals, maltose, maltodextrins, peeled white/yellow potato.

GI Index helps in controlling the blood sugar levels and is a key factor in diabetes management.

Glycemic Load

- Closely related to Glycemic Index
- Measures not only speed of glucose conversion but also amount of carbohydrates contained in a given food
- GL Calculation as ,

  GL = (GI x amount of Carb per serving/ 100

  For Eg. GL of Apple is 6 when serving portion of 138 gms having Carbs 16 gms & GI 38.
- GL Levels categorises in three categories,

Low GL: 0-10

Moderate GL: 11-19

High GL: 20+

In General, Low GL foods proved to be more beneficial for Managing Diabetes

Glycemic Index and Glycemic Load of Popular Foods

Green = Low ~ Orange = Medium ~ Red = High

Types of Food	Glycemic Index	Serving Size	Net Carbs	Glycemic Load
Peanuts	14	4 oz (113g)	15	2
Bean sprouts	25	1 cup (104g)	4	1
Grapefruit	25	1/2 large (166g)	11	3
Pizza	30	2 slices (260g)	42	13
Lowfat yogurt	33	1 cup (245g)	47	16
Apples	38	1 medium (138g)	16	6
Spaghetti	42	1 cup (140g)	38	16
Carrots	47	1 large (72g)	5	2
Oranges	48	1 medium (131g)	12	6
Bananas	52	1 large (136g)	27	14
Potato chips	54	4 oz (114g)	55	30
Snickers Bar	55	1 bar (113g)	64	35
Brown rice	55	1 cup (195g)	42	23
Honey	55	1 tbsp (21g)	17	9
Oatmeal	58	1 cup (234g)	21	12
Ice cream	61	1 cup (72g)	16	10
Macaroni and cheese	64	1 serving (166g)	47	30
Raisins	64	1 small box (43g)	32	20
White rice	64	1 cup (186g)	52	33
Sugar (sucrose)	68	1 tbsp (12g)	12	8
White bread	70	1 slice (30g)	14	10
Watermelon	72	1 cup (154g)	11	8
Popcorn	72	2 cups (16g)	10	7
Baked potato	85	1 medium (173g)	33	28
Glucose	100	(50g)	50	50

Nutritional values in this table is courtesy of:
http://nutritiondata.self.com/topics/glycemic-index#ixzz2Jwaw2XZx

Need for Study GI & Influencing Disorders

- GI a scale for food that quick release of Glucose in the Blood Stream
- Dietary Causes in Classical Text refers Glucose as reason for disorders such as Madhumeha/Prameha, Sthoulya Increased Cholesterol.
- **Prevalence statistics indicates**

- More than 100 million people & 14.4 million children Obese
- People with diabetes in the world rose to 830 million in 2022.
- Prevalence has been rising more rapidly
- More than half of people living with diabetes did not take medication for their diabetes in 2022.

- Risk Involves blindness, kidney failure, heart attacks, stroke and lower limb amputation.
- Diabetes caused over 2 million deaths due to complications of Diabetes and around 11% of cardiovascular deaths.

Influencing Disorder: Ayurvedic Chikitsa

- Various Dietary Causes as described in classical text by various acharyas,

Aharajanya Nidana	Ch.	Su	A.H	M.n
Navannasevana (new harvested grains)	+	+	+	
Navapanasevana (new drinks)	+	+		
Guda Vikara Atisevana (products of Jaggery)	+		+	+
Kaphavardhaka Ahara (Kapha producing regimens)	+		+	+
Atidadhisevana (Excessive use of curd)	+		+	+
Picchila Ahara			+	
Guru Ahara Sevana (heavy food consumption)			+	
Snigdha Dravya Sevana (oily food consumption)		+	+	
Ikshu Vikara Sevana (excessive sweat things)	+		+	
Ushna-Katu Rasa Sevana (hot & spicy food consumption)	+			
Tikta-Kashayarasa Sevana (bitter & astringent food consumption)	+			
Amla Lavanarasa Sevana (excessive sour & salty food consumption)	+		+	
Mutravardhaka Dravya (materials that increase urine)			+	
Medavardhaka Dravya (excessive fatty diets)		+	+	
Dravannapana (excessive liquids and fatty foods)				
Madhura-Dravya Sevana (sweet foods)		+	+	
Sheeta-Dravya Sevana (cold foods)		+	+	
Payansi-Sevana (excessive use of milk)	+		+	
Gramyamamsaatisevana (meat-soup of domestic animals)	+			+
Audakamamsaatisevana (meat-soup of aquatic animals)	+			+
Audakamamsaatisevana (meat-soup of Marshy animals)	+			+

In Ayurveda, Reference made to various ways of treating the Madhumeha, Sthoulya & related influencing disorders such as

- Ahara
- Vihara
- Aushadhi

Acharya Charaka referred ***Pathya*** as a synonym for treatment.Pathya helps to soften the *Srotas* (channels of circulation) and alleviate vitiated doshas.

Aharaj: Management through Diet

In Ayurveda, Soothrasthanas and Chikitsasthanas of Ashtangahrudayam by Vagbhata, Charaka Samhitha by Punarvasu Athreya and Susrutha Samhitha by Lord Dhanwanthari, provides dietary analysis.According to Ayurveda classics the Tikta and kashaya rasatmaka vegetables are indicated as patthyakara ahara dravya in prameha.The Ayurveda diet suggested, tailored to an individual's constitution (Prakruti) and current imbalance (Vikriti).*In Ayurved,* factors such as *Bal, Vaya, Kala, Agni, Prakriti desha different for people and considered for advising Diet for Management of*

Disorder. Whereas Glycemic response applies to the general population for the prevention of diabetes mellitus. Certain diet articles were recommended more, at the same time and sometimes some items were restricted. This modifications are on the base of the involvement of Doshadooshyas.Diets in Ayurveda by Acharayas are studied & correlated to Low Glycemic Index Diets in modern concept.

Acharya Shushrta advised,

- *Shyamaka* (barnyard millet),
- *Navara* (rice),
- *Amla* (Indian gooseberry),
- *Kapitha* (wood apple),
- *Tinduk* (gaub persimmon), and *Asmantak* (mock bodh tree),

Acharya Charak advised,

- consumption of *mantha* (a mixture of various corn flours with water),
- Barley powder, and light dishes prepared with barley.
- Y*avaudana* (cooked barley without added fats), *vatya* (barley porridge), and *saktu* (roasted corn flour) combined with broths from game birds and arid-region animals.
- Additionally, old *shali* rice should be cooked with *mudga* (*mung* bean) soup and bitter vegetable preparations."

The above has Laghu (light), *Ruksha*, (dry), *Kashyaa* (astringent), properties & have low glycemic index value.

Classification of Ahar Dravya in Ayurveda

Shuka Dhannya and Truna Dhannya Varga

- *Purana shali* (Oryza sativa Linn.-Rice)
- *Shashtik Shali* (Rice which crops within 60 days)
- *Godhuma* (Triticum aestivum Linn.-Wheat)
- *Yava* (Hordeum vulgare Linn.-Barley)
- *Shyamaka* (Echinochloa frumentacea Linn.-Barnyard millet)
- *Kodrava* (Paspalum scrobiculatum Linn-Kodo millet)
- *Kangu* (Setaria italic Linn. Foxtail millet, Italian millet)

Low glycemic food items with maximum amount of fibers

Shimbi Dhannya Varga

- *Mudga* (Vigna radiate Linn.-Green gram)
- *Aadhaki* (Cajanus cajan Linn.-Red gram)
- *Masura* (Lens culinaris Medic.-Lentil)
- *Chanaka* (Cicer arietinum Linn.- Bengal gram)
- *Kulattha* (Dolicus biorus Linn)

These have *Laghu, Ruksha guna, Madhura-kashaya Rasa, kapha* and *pitta shamak* properties.

Shaka Varga

- *Tanduliya* (Amaranthus spinosus Linn.- Chawali)
- *Patol* (Trichosanthes dioica Roxb.- Parawal)

- *Karwellaka* (Momordica charantia Linn.-Bitter guard)
- *Methica* (Trigonella foenum Linn.-Fenugreek)
- *Nimba* (Azadirachta indica Linn.)
- *Rasona* (Allium sativum Linn.-Garlic)
- *Udumbara* (Ficus racemosa Linn.)

Acharya Charaka mentioned that the rice should be eat with *tikta shaka dravya* in *prameha* patients.

The glycemic index of vegetables is proved to be also low & these observed to be indicated in Shaka Varga.

Phala Varga (Fruits)

- *Amalaki* (Emblica ofcinalisLinn.-Indian gooseberry)
- *Jambu* (Syzygium cumini Linn.-Jambul)
- *Bilva* (Aegle marmelos)
- *Kapittha* (Limonia acidissima- Elephent apple)
- *Apakva kadali phala (*Banana unriped*)*
- *Kalinga* (water melon)

Above mentioned *dravya* are indicated as *patthyakar* fruits in diabetes patients & low glycemic food items.

- ***Mamsa Varga includes*** *Vishkira mamsa, Pratuda, Jangala mamsa.*
- ***Taila Varga includes*** *Danti. Ingudi, Sarshapa, Atasi*
- ***Udaka Varga includes*** *Sarodaka, Kushodaka, Madhudaka.*
- ***Kritanna Varga includes*** *Apupa, Saktu, Yavodana, Vatya, Yusha.*
- **Others** are *Madhu, Hingu, Saindhava, Maricha, Lasuna*

Ayurveda: Foods Articles & GI

Food	Glycemic Index
Shastik shali, Rakta shali (Red Rice)	55
Kodrava (Kodo millets)	56
Yava (Barley)	25
Godhuma (Wholesome wheat flour)	75
Shyamaka (Barnyard millet)	42
Chanaka (Chickpeas)	33
Adhaki (Pigeon pea)	46
Kulattha (Horse gram)	51
Mudga (Green gram)	38
Mudga Yusha	30
Patol (Pointed gourd)	40
Karvellak (Bitter gourd)	18
Methika (Fenugreek)	10
Jambu phala (Indian gooseberry)	25
Amalaki (Indian gooseberry)	15
Kapitha (Wood apple)	38
Talaphala (Palmyra toddy palm)	35
Sarshapa tail (Mustard oil)	0
Shyamaka (Barnyard millet)	42
Chanaka (Chickpeas)	33
Adhaki (Pigeon pea)	46
Kulattha (Horse gram)	51

Food articles in today's Era and Its Glycemic Index

Food	Glycemic Index
Samosa	90
Kachori	82
Jalebi	95
Burger	75
French Fries	75
Donut	76
Instant rice noodles	61
Aloo paratha	45
Pasta	58
Plain White Bread	72
Crispbread	81
White Polished Rice	72
Cornmeal	70
Corn flakes	84
Pizza (per sliced)	40
Butternan roti	60
Idli with Chatni	62
Muffin	44
Custard	43
Icecream	61
Pastry	60
Skimmed milk	32

Comparatively high Glycemic index than that of *Pathya Ahara Dravyas* mentioned by various *Ayurvedic Acharyas*

GI & GL Based Meal Planning & Balanced Eating

Significance of GI Diet

- Low GI means a smaller rise in blood glucose levels after meals.
- Low GI diet can help people lose weight.
- Low GI diet can improve the body's sensitivity to insulin resistance.
- High GI food helps refuel carbohydrates stores after exercise.
- Low GI foods can improve diabetes control.
- Low GI food can prolong physical endurance.

Significance of GL Diet

- Low GL Diet relatively minimize spikes
- Limits fast consuming Carbs
- Specifies carbs that digest slowly
- Has less impact on sugar levels in blood

Balanced Healthy Eating

- Limit the amount of processed food.
- Eat more vegetables, fruits and milk as they with low glycemic index foods.
- Try to eat at least one low glycemic index food at each meal.
- Use vinegar of lemon juice instead creamy salad dressing.
- Eat low GI food most often and high food least often.
- Try to chose at least one low glycemic index food at each meal.
- Make fruit and milk as a part of your meal or daily consumption.

- Base the food choices primarily on overall nutrition – Including vitamins, minerals and fiber.
- Limit the amount of processed, refined starch foods, as they tend to be low in fiber and other nutrients and have a higher GI.
- Eat whole grain and barn breads more often than white breads.
- Eat fresh fruits and vegetables. Fruits and vegetables have a lower GI, so they break down into sugar slowly.

When serving size taken in to consideration it converts GI to GL

Eg. Grapes (GI:59 & GL: 11@120gms), Apple (GI:39 & GL: 06@120gms) etc.

CONCLUSION

- Dietary therapy/Pathya is the primary treatment for the prevention and management of Prameha, Obesity and Its Complications.
- Glycemic response not only about carbs content but quantity of carbs.
- Glycemic response applies to the general population & hence Low GI diets for the prevention of Influencing disorders such as Prameha/Sthoulya.
- Achieves goals for not only for blood glucose but also for cholesterol, triglycerides level, and weight management
- Ultimately support to reduce medications concurrently.

  Ancient knowledge regarding food proved to be helpful in controlling Diabetes Mellitus/ Prameha & its complication in a better way with modern tool of Glycemic Index and meal planning.

REFERENCES

1. Acharya YT, editor. Charaka Samhita of Agnivesha, Chikitsa Sthana. Ch. 6, Ver. 4. Reprint Edition. Varanasi: Chaukhamba Orientalia, 2007; 445.
2. Shukla Vidyadhar & Tripathi Ravi Dutt (editor), Vaidyamanorama hindi commentary on Charaka Samhita of Agnivesa Chakrapanidatta, Sutrasthana, chapter 27, vers no 13 Delhi;,Chaukhamba Sanskrit Pratisthan, Reprint edition, 2011; 390.
3. Pandeya GS (editor), Commentary: Vidyotini hindi commentary by Sashtri Kashinath on Charaka Samhita of Agnivesa, Chikitsasthana, chapter 6, vers no 48, Varanasi, Chaukhambha Sanskrita Sansthan, Reprint edition, 2009; 196-197.
4. Pandey GS (editor), Commentary by chunekar KC on Bhavaprakasa Nighantu (Indian Materia Medica) of Shri Bhavamisra, Dhannya Varga, verse no 28-30, Varanasi, Chaukhambha Visvabharati, Reprint edition, 2018; 628.
5. Prof. K.R. Srikantha Murthy, Vagbhatas Ashtanga Hrudayam VOL.II. Krishnadas Ayurveda Series- Nidana sthana- pramehachikitsa- Chapter-12. Pages-92-99 & Chikitsasthanam- Pages, 2012; 383-390.
6. Dr.Ramakaran Sharma and Vaidya Bhagvan Dash, Charaka Samhitha based on Chakrapani dathas Ayurveda dipika, Chawkhamba Sanskrit Studies Vol.XCIV. Chikitsasthanam- chapter-6-Prameha, 2013; 298-316.
7. Prof. K.R. Srikantha Murthy, Susrutha Samhitha. Vol.I, Jay krishnadas Ayurveda Series 102, Nidanasthana-Pramehanidanam-pages-503-510 & Chikitsasthanam-pages, 2012; 124-129.
8. Prof. K.R. Srikantha Murthy, Ashtanga Sangraha of Vagbhata reprint edition, published by Chaukambha Orientalia, 2012; 433.
9. Ashakumai & P.V.Thiwari, Yogarathnakara- part II, Haridas Ayurveda Series, Chauwkambha Viswabharati, first edition, 2010; chapter-39: 768.