

# FenuLean™

A Whitepaper on the sweet effects of bitter seeds





Bitter-tasting yellowish-brown Fenugreek seeds, though tiny, contain a multitude of food components essential for well-being. Moreover, regular use of the seeds helps counter certain lifestyle disorders (and more ailments) that are common to this decade than before. Studies in different parts of the world have shown that consumption of Fenugreek can help patients counter diabetic symptoms and cholesterol levels, leading to better weight-management behaviours. Metabolic capacities are also improved aiding the absorption of carbohydrates. Apart from its effects on blood-sugar levels, Fenugreek may have positive effects on skin and hair-related ailments, gut problems leading to indigestion or constipation, bronchitis and types of sexual dysfunctions. Arthritis and postpartum complaints could also be addressed.<sup>1</sup>

## The Magic of Fenugreek



**Manages diabetes**



**Regulates cholesterol**



**Aids weight management**



**Supports hair & skin quality**

The Fenugreek plant is grown in parts of Asia, Southern Europe and the Mediterranean region. In India, it is predominantly cultivated in the northern and western states of Uttar Pradesh, Punjab, Rajasthan, Gujarat, Madhya Pradesh and Maharashtra, and is harvested annually. While the Fenugreek plant in itself is consumed as a vegetable, its seeds are commonly used in Asian curries and have been an essential part of alternative medicine in East Asia. However, the bitterness component deters many from its use in their regular diet. Reduced intake of fiber and minerals, of which Fenugreek seeds are rich in, is a common phenomenon in a society that is crunched for time and thrives on fast food.<sup>2</sup>

## Low intake of fiber: Effects

If a lay man were to observe dietary patterns, he/she would highlight how in a fast-paced world people in varied age groups rely on foods that are quick to make, come in ready to eat packets or even on take out.<sup>3</sup>

Fiber, which is essential for the health of the digestive system, has been vanishing slowly from breakfast, lunch and dinner. Until recently cereals, frozen foods appear in homes' pantries more often than organic, healthy food.

According to the Harvard School of Health, information on the Government of Victoria's website (Australia), Medical News Today and Mayo Foundation for Medical Education and Research, low intake of fiber can cause weight gain, which could lead to other lifestyle disorders, including vascular and diabetic concerns. There could be digestion-related disorders like constipation, irritable bowel syndrome or even haemorrhoids. Low fiber consumption can also lead to colon cancer (or the cancer of the

<sup>1</sup><https://www.medicalnewstoday.com/articles/324334.php>; <https://www.healthline.com/nutrition/fenugreek#section5>; <https://www.healthline.com/nutrition/fenugreek-for-hair#healthy->

<https://www.encyclopedia.com/plants-and-animals/plants/plants/fenugreekcalp>; <https://draxe.com/fenugreek/>; <https://food.ndtv.com/health/5-incredible-fenugreek-benefits-from-lowering-cholesterol-to-aiding-digestion-1395397>

<sup>2</sup><http://www.indianspices.com/spice-catalog/fenugreek> <sup>3</sup><https://www.vox.com/2019/3/20/18214505/fiber-diet-weight-loss>; a



large intestine in some cases). Chronic constipation, fecal inconsistency and diverticular disease are common complaints by people with very low fiber components in their body. Consumption of fiber foods is more important for older people, owing to the slowing down of digestive mechanisms, a literature review of a study - Nutrition in the Elderly: Role of Fiber, suggests. An article in SFGate (a San Francisco online publication) says “constipation is more common in the elderly due to reduced intestinal peristalsis or rhythmic contractions, inactive lifestyles and diets low in fiber”.<sup>4</sup>

Per the Harvard School of Public Health, and publications such as Medical News Today and Medline Plus, intake of both soluble and insoluble fiber is required for the human body to function well and stay healthy, as both types provide varying physiological functions.<sup>5</sup> Infants can start eating small amounts of fiber when they are introduced to solid food. Per Medical News Today and the British Nutrition Foundation, on an average, children between one and five years of age require at least 14 to 15 grams of fiber every day, which will only increase with age. Between the age of 5 and 18, anywhere between 19 to 26 grams. According to the British Nutrition Foundation, Medical News Today and Nutrition Australia, the stipulated fiber intake for adults at an average is an average intake of 25 grams to 30 grams for both men and women<sup>6</sup>. However, between 2001 and 2010, the mean fiber intake (annual) for children and adolescents was 13.2 ( $\pm 0.1$ ) grams/day in Western countries such as the US, and the mean fiber intake for adults over 18 years was 16.1 ( $\pm 0.2$ ) grams/day.<sup>7</sup>

## Everyday Fiber consumption

Kids		Female			Male		
1-3 Year	Up to 8 Year	9-18 Year	19-50 Year	50+ Year	9-18 Year	19-50 Year	50+ Year
19 gm	25 gm	26 gm	25 gms	21 gms	31 gms	38 gms	31 gms

Bio-gen Extracts Pvt. Ltd. understands the gap between the lack of fiber intake in an easy form and has developed FenuLean™. FenuLean™ is manufactured from Fenugreek seeds to enhance fiber intake and aid in lifestyle disorders. It is de-bitterized and de-fattened to only bring to the market the nutritional value from the seeds, and make it palatable and easier to consume.

The fast-moving consumer goods sector, globally, is already flooded with meal supplements and replacements. Some claim to be gluten-free, some are heavy on whey protein and some others are alternative flours, cutting out fat components from simple carbohydrates. Protein bars, shakes, low-fat ready-to-eat packets line shelves of supermarkets. However, replacing meals or adding supplements to the diet can more often than not add pressure to household budgets. Alternatively, the availability of Fenugreek leaves and seeds is not necessarily a concern, but consuming enough of these in order to propel positive effects may not be possible every day and for each individual. Herbal supplements that contain fenugreek extracts are available but they can contain varying amounts of Fenugreek seed extracts, which could affect the efficacy of health.

<sup>4</sup><https://www.hsph.harvard.edu/nutritionsource/carbohydrates/fiber/>; <https://www.betterhealth.vic.gov.au/health/healthyliving/fibre-in-food>;  
<sup>5</sup><https://www.medicalnewstoday.com/articles/324153.php>; <https://www.hsph.harvard.edu/nutritionsource/carbohydrates/fiber/>;  
<sup>6</sup><https://www.medicalnewstoday.com/articles/324153.php>; <https://www.nutrition.org.uk/healthyliving/basics/fibre.html>;  
<sup>7</sup><https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4344579/>



## FenuLean™

FenuLean™ aims to address nutritional deficiencies with superior meal supplements. FenuLean™ is available in the market in the form of flakes and powders with multiple uses. Maintaining the content of fiber, protein, different vitamins and minerals, while getting rid of the bitter flavour as well as any fat, classifies FenuLean™ as a unique health food. Consumer demands for non-artificial products, especially in the food sector, are rising. Devoid of synthetic flavouring and ingredients, FenuLean™ could then be put in the clean-label category. Literature on the product, its creation and process of development and clinical studies are readily available, upholding transparency.



**High Protein**  
**>20%**



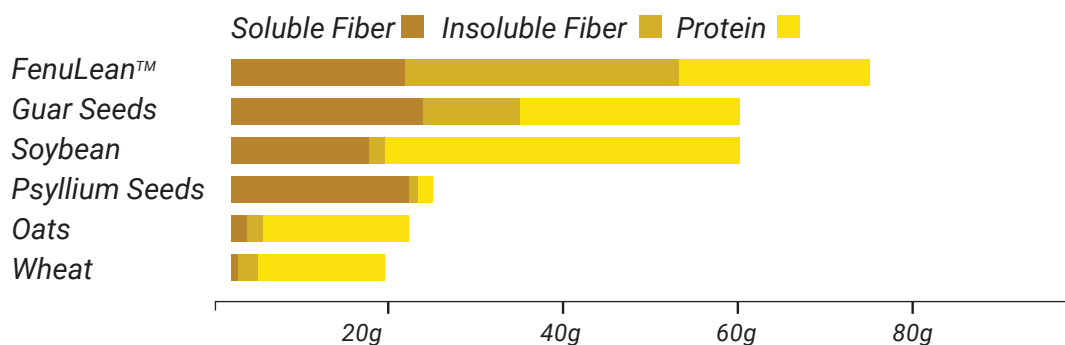
**High Fiber >50%**  
**Insoluble 30% Soluble 20%**



**Low Fat <0.5%**

Since producing powder and flakes from Fenugreek seeds is a novel proposition, Bio-gen Extracts Pvt. Ltd. has applied for a patent, which is pending approval. The company aims to create a buzz with dynamic subject matter on Fenugreek and its positive applications. The de-bitterized and de-fattened powder and flakes, under the FenuLean™ brand contain essential amino acids, along with the richness of vitamins and minerals, but with a neutral taste. Keeping users satiated for longer periods so they do not begin to snack on unhealthy foods, is another distinguishing characteristic of FenuLean™.

Let us compare the composition of soluble and insoluble as well as protein components



between FenuLean™ with other fiber products available in the market:

The above graph indicates that the FenuLean™ product contains essential amounts of both soluble and insoluble fiber as well as protein in required quantities when compared





**Non-GMO**



**Gluten-Free**



**Allergen-Free**



**Vegan & Vegetarian**

with other fiber products. This highlights how only smaller quantities of FenuLean™ flakes and powder can potentially provide superior benefits.

FenuLean™ can act as a meal replacement if used as a substitute for the carbohydrates one has in their meals. Besides being used as flour for some breads, health-conscious consumers can also make better cheat meal choices when creating treats with flakes and powders. An enterprising home chef could bank on FenuLean's neutral taste to cook up delicacies.

Other aspects that could lure anyone planning to be healthy, are its high fiber content, which is quintessential to healthy living today. High protein and extreme low fat content also attract individuals. The protein and fiber flakes that are manufactured from Fenugreek seeds are gluten-free and produced from non-GMO sources. FenuLean™ can be consumed by people who strictly follow the vegan diet, due to its plant-based structure. The



## What studies indicate

techniques used to extract and produce FenuLean™ are designed in such a way that it aims to maximize the benefits from Fenugreek seeds and transfer that onto consumers.

A clinical study published by the International Journal of Medical and Health Research investigated the effects of FenuLean™ flakes that are rich in fiber, and how safe its consumption would be. The areas of research were: studying the effects on hunger, equilibrium of glucose levels and response to insulin among adult individuals who are healthy. Previous studies conducted on the effect of Fenugreek fiber on satiety ignored two factors: changes through Fenugreek fiber “flakes” intake as well as the effects on adults with the Body Mass Index (BMI) of less than 30, specifically healthier individuals, but with lesser time to take care of their health.

The study on FenuLean™ flakes randomly grouped adults between the ages of 18 and 65



with a BMI of less than 30, after their consent. The study excluded individuals who were allergic to Fenugreek seeds, had an allergy or active infection, had a history of a chronic disease, diabetic individuals or ones who were on diabetes fighting drugs, complaining of cardiac and hormonal imbalances (such as thyroid), pregnant or lactating women, or the ones planning to conceive. Subjects who were enrolled in other intervention programs were also excluded.

Following an initial screening, the subjects were asked to consume either 5 grams or 10 grams of FenuLean™ Flakes. They also were asked to fast in order to determine glucose and blood-sugar levels, before and after beginning the intake of the fiber flakes. Satiety and palatability of FenuLean™ flakes were rated by the subjects on the basis of scores on



questionnaires. The study also included crossover examinations where individuals taking 5 grams took 10 grams of flakes instead, and vice versa, after a week.

The study concluded that FenuLean™ flakes were safe to consume, as undesirable effects were not noticed. When the flakes are consumed with a standard breakfast it had the ability to reduce hunger, increase satiety and also cut the desire to consume more food. Since appetite suppression is a task that FenuLean™ performs, it helps healthy individuals control their energy consumption. Although there was no evidence that FenuLean™ increased metabolic rates to aid digestion of carbohydrates, insulin response improvement was observed. The study also concluded that intake of 10 grams of FenuLean™ flakes produced more benefits than a smaller quantity of 5 grams.

FenuLean™ flakes and powders are high-fiber meal accompaniments, with a neutral taste. However, since the product is gluten-free, low fat and contains a high amount of protein, it can be used to make foods that can also replace meals, such as granola bars, chocolates, breads and even soups. The intake an individual requires is also minimal compared with other meal replacements/supplements, reducing costs of shifting to a healthy diet.

Determined to break the market with its dedication to quality, Bio-gen Extracts Pvt. Ltd. values transparency and traceability as its defining quality. FenuLean™ is manufactured in a facility that has GMP (Good Manufacturing Practices), ISO (for efficient management systems), HACCP (hazard analysis), OHSAS (health and safety management) certifications and is approved by the FSSAI (food safety standards—India). To ascertain FenuLean's effects on larger populations, a second study planned by Bio-gen Extracts Pvt. Ltd.

was concluded. The 100-subject study examined the consequences of FenuLean™ flakes consumption in individuals with a BMI of over 18 but less than 30. Changes to appetite scores, in weight and BMI, and blood glucose homeostasis were determined. Bio-gen Extracts Pvt. Ltd. is excited to share the results of this pivotal study within the next couple months.

These Health benefits of Fenugreek have been listed by popular publications such as Medical News Today, Health Line, Dr Axe.com and NDTV.com.

## Disclaimer


This is an informative document and the statements in it have not yet been validated by the Food and Drug Administration.

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