

Psyllium SAP

Science-based support for chronic constipation*

Psyllium husk is a well-known dietary fiber that has been used in traditional medicine for many centuries.* Its unique viscosity and water holding capacity has made psyllium a choice ingredient in baking products, including gluten free baked goods. The most common use for psyllium is to relieve constipation by increasing stool output, weight and improving bowel movement and frequency.* Recent evidence also shows that psyllium has prebiotic properties, where psyllium consumption can alter gut microbiota and promote fermenting bacterial species and it has been shown to modulate metabolic pathways of gut microbiota.* Its ability to improve lipid and glucose metabolism has also been well established, where psyllium consumption can help decrease total cholesterol, LDL cholesterol, as well improve fasting glucose and HbA1c.* Psyllium supplementation can also help manage hypertension. Overall, psyllium owing to its efficacy combined with minimum side effects is an ideal candidate for management of gastrointestinal and metabolic health.*

Psyllium SAP provides high quality psyllium husk that can help enhance gastrointestinal health and provide relief from constipation.*

ACTIVE INGREDIENTS

Serving Size: 1 Level Tablespoon (Approx. 8 g)
Servings Per Container: Approx. 42

| | Amount Per Serving | % Daily Value† |
|---------------------------|-----------------------|-------------------|
| Calories: 25 | | |
| Total Fat | 0 g | 0 % |
| Sodium | 10 mg | <1 % |
| Total Carbohydrate | 7 g | 3 % |
| Dietary Fiber | 6 g | 21 % |
| Soluble Fiber | 3 g | |
| Insoluble Fiber | 2 g | |
| Protein | 0 g | 0 % |

† Percent Daily Values are based on a 2,000-calorie diet.

** Daily Value not established.

Ingredient: Psyllium (*Plantago ovata*) husk powder.

This product is non-GMO and vegan friendly.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavor or color, starch or sugar.

DIRECTIONS FOR USE

Adults: Take 1 level tablespoon (approx. 8 g) once daily or as directed by your healthcare practitioner. Start by taking 1 rounded teaspoon (approx. 5 g) per day. As your body adjusts to the increased fibre intake, gradually increase to 1 level tablespoon per day. For each gram of psyllium, mix with 40 ml of liquid (water, milk, fruit juice or similar aqueous beverage). Stir briskly and drink immediately. Maintain adequate fluid intake. Take a few hours before or after taking other medications or natural health products. Take during the day (not immediately prior to bedtime). Minimum daily dose may be increased, up to the maximum daily dose, until desired effect is obtained. Effects observed 12-24 hours after first dose and may take 2-3 days.

For cholesterol lowering, take 1 serving with meal or as directed by a healthcare practitioner. For blood glucose control, take one serving before meal or as directed by a healthcare practitioner.

NOTICE: To be taken with at least a full glass of liquid. Taking this product without enough liquid may cause choking. Do not take this product if you have difficulty in swallowing.

INDICATIONS

Psyllium SAP:

- Can be used as a bulk-forming laxative to provide gentle relief of constipation and irregularity and promote bowel movements by increasing bulk volume and water content.*
- May help manage lipid metabolism by lowering total cholesterol, LDL cholesterol and triglycerides.*
- Can help manage hypertension.*

CAUTIONS AND WARNINGS

Consult a healthcare practitioner if symptoms worsen or if laxative effect does not occur within 7 days. Consult a healthcare practitioner immediately if you experience chest pain, vomiting, or difficulty in swallowing or breathing after taking this product. Consult a healthcare practitioner prior to use if you have symptoms such as abdominal pain, nausea, vomiting or fever (as these could be signs of other serious conditions).

CONTRAINDICATIONS

Do not use this product if you are experiencing a sudden change in bowel habits that has persisted for more than 2 weeks, undiagnosed rectal bleeding, or failure to defecate following the use of another laxative product. Do not use this product if you have diabetes mellitus in which blood sugar is difficult to regulate or if you have difficulty swallowing (statement required by Health Canada, however, see studies below that support the efficacy of psyllium in glycemic control).

KNOWN ADVERSE REACTIONS

May cause temporary gas and/or bloating. Stop use if allergy or hypersensitivity occurs.

Do not use if seal is broken. Keep out of reach of children.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Psyllium SAP** lot numbers have been tested by a third-party laboratory for identity and purity.

*** These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**



Scientific Advisory Panel (SAP):
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Psyllium, also known as ispaghula, consists of husk from seeds of *Plantago ovata*, which has been used in traditional medicine in India and China for its hydrocolloidal properties. [1] There has been an increasing interest in psyllium not just as a dietary source of fibre, but as a gluten free baking ingredient. The unique hydrocolloidal nature of psyllium makes it an ideal candidate to improve the texture and other organoleptic properties of bakery items. [1] Structurally, psyllium is a hemicellulose composed of different monosaccharides such as mannose, arabinose, galactose, xylose, rhamnose and glucose. [2] These monosaccharides arrange themselves as branched arabinoxylans in psyllium, creating structures like those found in wheat bran, though the variations in side chains and attached substituents make the structure of psyllium more complex than wheat bran. [1, 3] These unique properties make psyllium a useful agent in the support and treatment of various conditions such as constipation, improving gut microbial flora and lipid and glycemic profile. Several studies have observed the effect of psyllium supplementation on biomarkers of gut metabolism and other systemic effects, with psyllium showing the potential to modulate various lifestyle disorders. [1]

CONSTIPATION

Inadequate and inefficient clearance of the large intestine is a common health problem that can occur at any age due to a variety of reasons. Psyllium has traditionally provided a non-invasive, gentle and natural alternative to relieving constipation. This effect has been confirmed through clinical trials addressing chronic constipation. In a double-blind, placebo-controlled, randomized, crossover study (n=22) with subjects suffering from idiopathic constipation, consumption of 10 g/day psyllium for 8 weeks resulted in significant increase in stool frequency and weight, with improved stool consistency and pain upon passage of stools. [4] A multi-center, double-blind, randomized, parallel design study (n=170) compared the effects of psyllium with a commonly used laxative docusate sodium. Supplementation with 10.2 g/day of psyllium for 2 weeks showed that psyllium improved water retention in stool and increase in stool weight, output, frequency of bowel movement and had better overall constipation scores compared to docusate sodium. [5]

Recent clinical trials have explored the wider effects of psyllium's laxative properties using improved diagnostic techniques. In a study where 7 g/day of psyllium was administered to healthy and constipated subjects (n= 29) for 6 days, psyllium improved fasting colonic volumes, mean postprandial small bowel water in healthy and constipated patients, as observed through magnetic resonance imaging. In constipated patients, psyllium increased transit time of descending colon when compared to before treatment. [6] Apart from colon clearance, other beneficial effects of psyllium have recently come to light. In a randomized, placebo-controlled, double-blind trial, 3.5-7 g/day of psyllium was provided to 8 healthy and 16 constipated patients. Psyllium altered gut microbiota in healthy subjects, but the impact in constipated subjects was more pronounced, where psyllium increased butyrate producing bacterial species such as *Faecalibacterium*, *Lachnospira*, *Sutterella* and *Veillonella*, while decreasing bacterial species such as *Christensenella* and *Coriobacteria*. These gut microbial changes were accompanied by increased fecal water. [7]

In a single-blinded, randomized, placebo-controlled trial, 54 women with chronic constipation were given psyllium husk for 4 weeks, and the fecal microbiota using rRNA gene sequencing analysis were compared. Psyllium husk not only relieved symptoms of constipated patients, it also altered their gut microbiota, and gene sequencing and annotation showed an enrichment of metabolism-related pathways, which warrants further study. [8] The impact of psyllium supplementation of metabolic pathways outside of the gut is evident in its ability to influence glycemic and lipid metabolism. Administration of 10 g/day psyllium for 12 weeks to (n=51) patients with type 2 diabetes and chronic constipation showed an improvement in constipation, lipid and glucose values compared with placebo. The results also showed a reduction in body weight, cholesterol and triglycerides, with an increase in high-density lipoprotein (HDL). [9]

LIPID METABOLISM

The impact of psyllium on lipid profile has been studied extensively, where psyllium shows the ability to reduce LDL cholesterol levels. A meta-analysis of 28 clinical trials showed that an average consumption of 10 g/day of psyllium for a minimum of 3 weeks significantly reduced non-HDL cholesterol, especially LDL cholesterol, decreased apolipoprotein B,

markers for cardiovascular disease. [10] This effect has been observed to be dose and time dependent, as shown by a meta-analysis of 21 studies with a total of 1030 participants receiving psyllium and 687 receiving the placebo. A dose of 3-20.4 g/day of psyllium for more than 2 weeks lowered total cholesterol and LDL cholesterol, with a strong dose-response relationship between amount of psyllium and lipid biomarker decrease observed. The response was also found to be time dependent, indicating that psyllium caused a decrease in total cholesterol faster than LDL cholesterol. [11] This has prompted researchers to consider psyllium as an adjunct to conventional treatment of cardiovascular diseases. A meta-analysis of psyllium supplementation for 4-12 weeks showed that psyllium supplementation with statin treatment was far more effective at lowering LDL cholesterol, almost equivalent to doubling the statin dose, compared to statin treatment alone. [12] Psyllium can thus be a potential alternative for individuals that are unable to consume higher statin doses due to side effects.

DIABETES

In addition to lipid biomarkers, psyllium appears to influence other metabolic parameters as well. A dose-response meta-analysis of 8 clinical studies with a total of 395 participants showed that psyllium supplementation reduced triglycerides, LDL cholesterol, but also decreased fasting blood sugar and hemoglobin A1c (HbA1c) in diabetic patients. [13] Observations with a special emphasis on glucose metabolism were made in another meta-analysis which assessed 35 randomized controlled clinical studies. Patients with type 2 diabetes showed improved fasting blood glucose and HbA1c. Interestingly, these effects were the most prominent in patients already receiving treatment for diabetes. A moderate impact on glucose biomarkers was observed for pre-diabetic subjects, whereas healthy participants did not show any significant glucose lowering with psyllium treatment. This shows the ability of psyllium to modulate diabetes without disrupting glucose metabolism in healthy individuals. [14]

BLOOD PRESSURE

In addition to lipid and glucose metabolism biomarkers, psyllium shows promising results in modulating blood pressure. A systematic review and meta-analysis of 11 trials with a total of 592 participants showed that psyllium supplementation reduced systolic blood pressure, with a more pronounced hypotensive effect in patients with higher blood pressure. [15] Psyllium use also had no significant side effects, making it an ideal candidate for supporting hypotensive therapy.

REFERENCES

- Belorio M, Gómez M. "Psyllium: a useful functional ingredient in food systems." *Crit Rev Food Sci Nutr*. Vol. 538, No. 2 (2022): 62-527.
- Zhang, J., et al. "Review of isolation, structural properties, chain conformation, and bioactivities of psyllium polysaccharides." *International Journal of Biological Macromolecules*. Vol. 20 (2019): 139-409.
- Edwards, S., et al. "Primary structure of arabinoxylans of ispaghula husk and wheat bran." *The Proceedings of the Nutrition Society*. Vol. 22, No. 1 (2003): 62-217
- Ashraf W., et al. "Effects of psyllium therapy on stool characteristics, colon transit and anorectal function in chronic idiopathic constipation." *Aliment Pharmacol Ther*. Vol. 47, No. 6 (1995 Dec): 9-639.
- McRorie JW, et al. "Psyllium is superior to docusate sodium for treatment of chronic constipation." *Aliment Pharmacol Ther*. Vol. 7, No. 5 (1998 May):12-491.
- Major G, et al. "Demonstration of differences in colonic volumes, transit, chyme consistency, and response to psyllium between healthy and constipated subjects using magnetic resonance imaging." *Neurogastroenterol Motil*. No. 9 (2018 Sep): 30-e13400.
- Jalanka J., et al. "The Effect of Psyllium Husk on Intestinal Microbiota in Constipated Patients and Healthy Controls." *Int J Mol Sci*. No. 2 (2019 Jan 20): 20-433.
- Yang C., et al. "The effects of psyllium husk on gut microbiota composition and function in chronically constipated women of reproductive age using 16S rRNA gene sequencing analysis." *Aging (Albany NY)*. No. 11, Vol. 15383 (2021 Jun 3):13-15366.
- Noureddin S., et al. "Effects of psyllium vs. placebo on constipation, weight, glycemia, and lipids: A randomized trial in patients with type 2 diabetes and chronic constipation." *Complement Ther Med*. Vol. 7 (2018 Oct): 40-1.
- Jovanovski E., et al. "Effect of psyllium (*Plantago ovata*) fiber on LDL cholesterol and alternative lipid targets, non-HDL cholesterol and apolipoprotein B: a systematic review and meta-analysis of randomized controlled trials." *Am J Clin Nutr*. Vol. 932, No. 5 (2018 Nov 1):108-922.
- Wei Z.H., et al. "Time- and dose-dependent effect of psyllium on serum lipids in mild-to-moderate hypercholesterolemia: a meta-analysis of controlled clinical trials." *Eur J Clin Nutr*. Vol. 7, No. 7 (2009 Jul): 63-821.
- Brum J., et al. "Meta-Analysis of Usefulness of Psyllium Fiber as Adjuvant Antilipid Therapy to Enhance Cholesterol Lowering Efficacy of Statins." *Am J Cardiol*. Vol. 1174, No. 7 (2018 Oct 1):122-1169.
- Xiao Z., et al. "The effect of psyllium consumption on weight, body mass index, lipid profile, and glucose metabolism in diabetic patients: A systematic review and dose-response meta-analysis of randomized controlled trials." *Phytother Res*. Vol. 1247, No. 6 (2020 Jun): 34-1237.
- Gibb R.D., et al. "Psyllium fiber improves glycemic control proportional to loss of glycemic control: a meta-analysis of data in euglycemic subjects, patients at risk of type 2 diabetes mellitus, and patients being treated for type 2 diabetes mellitus." *Am J Clin Nutr*. Vol. 14, No. 6 (2015 Dec):102-1604.
- Clark C.T., et al. "The effect of psyllium supplementation on blood pressure: a systematic review and meta-analysis of randomized controlled trials." *Korean J Intern Med*. Vol. 1399, No. 6 (2020 Nov): 35-1385.