

# Inflammation in Irritable Bowel Syndrome (IBS): Role of Psyllium Fiber Supplementation in Decreasing Inflammation and Physiological Management of IBS

Pankaj Garg <sup>1,2</sup>

<sup>1</sup>Garg Fistula Research Institute, Panchkula, India

<sup>2</sup>Indus International Hospital, Mohali, India

**Cite this article as:** Garg P. Inflammation in irritable bowel syndrome (IBS): Role of psyllium fiber supplementation in decreasing inflammation and physiological management of IBS. *Turk J Gastroenterol.* 2021; 32(1): 108-110.

Dear Editor,

I read with interest the wonderful article by Karatay et al.<sup>1</sup> They have demonstrated a significantly higher level of serum C-reactive protein (CRP) and a lower level of circulating resolvin D1 (RvD1) in the constipation subtype of irritable bowel syndrome (IBS-C). These findings highlight the role of inflammation in IBS. I have a small query and would like to add an interesting point of view to the published paper.

Why was only IBS-C included in the study and other subtypes of IBS not included? The latter would have given much more insight in the pathogenesis of IBS.

Another interesting observation merits discussion. Fiber supplement especially psyllium decreases inflammation in the gut.<sup>2,3</sup> Epidemiological studies have shown that psyllium supplementation decreases CRP levels in IBS patients.<sup>2,3</sup> However, fiber supplement has shown to be only mild-moderately effective in IBS. The reason for this could be that perhaps the benefits of psyllium supplementation in IBS have not been properly studied and therefore have been underestimated.

Previously published studies missed out on 2 important aspects. First, they studied psyllium supplementation at quite lower doses (5-10 g/day) in IBS and second, they did not focus on the amount of water to be taken with fiber supplements. Though these studies demonstrated a beneficial effect of psyllium on IBS symptoms, the resultant benefit was perhaps just a proportion of the potential achievable benefit. The average fiber requirement for an adult is 35-40 g/day, whereas the daily fiber

intake is <15 g/day.<sup>4</sup> So there is an approximate deficiency of 20-25 g fiber/day which needs to be supplemented.<sup>4</sup> When the fiber supplement was increased from 10 to 20-25 g/day, there was significant increase in relief in IBS patients.<sup>5</sup> The second aspect is the amount of water taken along with the fiber. Psyllium absorbs water and gets swollen, takes water to the rectum, thereby making stools softer and bulkier.<sup>4</sup> However, for this to happen optimally, adequate water must be taken along with the fiber intake (@25 mL water/g fiber, 500 mL water with 25 g fiber/day).<sup>4</sup> These aspects markedly increase the efficacy of fiber supplements but were ignored by the previous studies.

Of all the available types of fiber, psyllium is the most effective in IBS. The reasons for this merit discussion. There are different qualities of various fibers that determine their utility and beneficial role in IBS.

First is the water holding capacity of the fiber. Insoluble fibers do not hold much water due to which it is not helpful in making stools soft. Soluble fiber absorbs and retains water. Therefore, the water holding capacity of soluble fiber helps in relieving constipation.

The second quality is the viscous/gel-forming capacity of the fiber. This quality makes the fiber viscous due to which it travels smoothly through the stomach and intestines. If the bowel movement is too slow (as in constipation), the viscous fiber makes the movement faster and if the movement is too fast (as in diarrhea), the viscosity decreases the movement and increases transit time. This phenomenon helps in regulating bowel movement and helps in stabilizing symptoms in both constipation and diarrhea.

Corresponding author: Pankaj Garg, e-mail: [drgargpankaj@yahoo.com](mailto:drgargpankaj@yahoo.com)

Received: March 23, 2020 Accepted: May 17, 2020 Available Online Date: April 13, 2021

© Copyright 2021 by The Turkish Society of Gastroenterology · Available online at [turkjgastroenterol.org](http://turkjgastroenterol.org)

DOI: 10.5152/tjg.2020.20229

The third quality is the level of fermentation of fiber in the gut. A fiber that ferments very well would neither hold water nor would be viscous. Rather gas produced as a result of excessive fermenting leads to bloating and worsening of symptoms in IBS. Therefore, a soluble viscous fiber would lose its beneficial effects in IBS if it is highly fermentable. An example of such a fiber is oats.

The only fiber which is soluble, has high water-holding capacity, has good viscous/gel-forming capacity, and is non-fermenting/mildly fermenting is ispaghula husk or psyllium husk (seed of the plant *Plantago ovata*). Therefore, psyllium is immensely beneficial in all types of IBS as it has a bowel-regulatory effect (beneficial effects in both constipation and diarrhea). Rest of the fibers have mixed (benefits plus harmful) effects in IBS. Since psyllium is not present in diet, it has to be taken as a supplement if its benefits have to be availed in IBS.

Along with psyllium supplementation, few other physiological steps (elevation of feet and doing abdominal muscle exercises while sitting on the toilet-commode and drinking water in the morning) help to regulate bowel

movements and provide substantial relief in IBS. All these steps can be summarized by a mnemonic—FEED:

**(F) Fiber supplement** Psyllium husk (ispaghulla husk), 5 tsf (25 g) taken with 500 mL water once a day. **(E) Elevation** of feet while sitting on the toilet-commode by keeping a small bench (of 12-16 inches height) below the feet. Increasing the hip flexion by raising the legs in a sitting position straightens the recto-anal canal. This makes the defecation process easier, more regulated, physiological, and less strainful.<sup>4</sup> **(E) Exercises** of the abdominal muscles while sitting on the toilet-commode. Doing abdominal wall exercise while sitting on the toilet-commode activates gastrocolic reflex and helps in bowel regulation.<sup>4</sup> **(D) Drinking** (500-600 mL) water in empty stomach in the morning. This also stimulates gastro-colic reflex and increases peristaltic movements and stimulates bowel motion.<sup>4</sup> This regimen (FEED) was tried in 7 patients with IBS (4 IBS with constipation, 2 IBS with diarrhea, 1 IBS mixed). After 12 weeks, all patients responded well to this physiological treatment and reported a major relief (>90%) in their symptoms.

Thus psyllium is beneficial in IBS through the microbial and neural route and by decreasing inflammation. Psyllium supplement at adequate dosage (at least 20-25 g per day) with adequate amount of water, coupled with other physiological steps could provide substantial relief in IBS. This treatment is physiological, simple, economical, easy to follow, and harmless and can safely be tried in most patients of IBS. It has the potential to add tremendous value to the available treatment options to manage IBS. Long-term controlled studies are needed to corroborate this evidence.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** The author has no conflict of interest to declare.

**Financial Disclosure:** The author declared that this study has received no financial support.

**Presentation:** The abstract of this paper was presented at Society of American Gastrointestinal Endoscopic Surgeons (SAGES) annual meeting, Cleveland, OH, USA on 2 April 2020.

## REFERENCES

- Karatay E, Utku ÖG. Serum resolvin D1 levels as a marker of inflammation in constipation dominant irritable bowel syndrome. *Turk J Gastroenterol.* 2020;31(2):113-119. [\[CrossRef\]](#)
- Minihane AM, Vinoy S, Russell WR, et al. Low-grade inflammation, diet composition and health: current research evidence and its translation. *Br J Nutr.* 2015;114(7):999-1012. [\[CrossRef\]](#)

## MAIN POINTS

### What is already known

- Inflammatory markers increase in IBS. Fiber especially psyllium decreases inflammation in IBS.
- Simply advising to increase dietary fiber does not benefit the patients of IBS as all the dietary fiber is not very beneficial.
- Soluble, mildly-fermenting, viscous fiber with high water-holding capacity helps in IBS. Only psyllium has all these characteristics.
- Published studies have analyzed the benefits of psyllium husk in the daily dose of only 5-10 grams/day.
- Previous studies have not focused on amount of water to be taken with the psyllium husk.

### What new this paper suggests

- Psyllium intake can't be increased from diet. It has to be taken as a supplement.
- Psyllium needs to be taken in higher dosage (20-25 grams/day) to optimize its effect.
- Psyllium needs to be taken with sufficient water (@25 ml/gram fiber) to maximize its benefit.
- Additional supportive physiological steps which regulate gut motion further enhance the benefit of fiber supplement.
- It's logical and easier to treat 'irritable' bowels physiologically than pharmacologically as it is easier to treat 'irritability' in a person with psychotherapy rather than with drugs.

3. King DE, Egan BM, Woolson RF, Mainous AG 3rd, Al-Solaiman Y, Jesri A. Effect of a high-fiber diet vs a fiber-supplemented diet on C-reactive protein level. *Arch Intern Med.* 2007;167(5):502-506. [\[CrossRef\]](#)

4. Garg P. Psyllium husk should be taken at higher dose with sufficient water to maximize its efficacy. *J Acad Nutr Diet.* 2017;117(5):681. [\[CrossRef\]](#)

5. Kumar A, Kumar N, Vij JC, Sarin SK, Anand BS. Optimum dosage of ispaghula husk in patients with irritable bowel syndrome: correlation of symptom relief with whole gut transit time and stool weight. *Gut.* 1987;28(2):150-155. [\[CrossRef\]](#)