Systematic Review

Curcumin as a Complementary Therapy for Irritable Bowel Syndrome with Diarrhea: Efficacy and Alternative Approaches

Abstract

Irritable bowel syndrome with diarrhea (IBS-D) is a common gastrointestinal disorder marked by abdominal pain, bloating, and frequent diarrhea. Conventional treatments often provide limited relief, prompting many patients to explore complementary therapies, including curcumin. Curcumin, a compound with anti-inflammatory and gut-modulating properties, shows potential as a therapeutic option for IBS-D. This systematic review aimed to assess the effectiveness of curcumin supplementation in managing IBS-D symptoms. A comprehensive search was conducted across Ovid Medline, Cochrane, CINAHL, and Scopus databases, using relevant search terms. Articles that met inclusion criteria focused on curcumin or complementary therapies for IBS-D in adults. After screening, six studies were selected for review. These studies were categorized into four themes: curcumin's impact on symptom relief, herbal and alternative remedies, dietary interventions, and complementary therapies. One study specifically examining curcumin supplementation found significant reductions in IBS-D symptoms, particularly abdominal pain and bloating, compared to a placebo. Two studies explored herbal remedies, including Ayurvedic treatments, with mixed results in symptom management. Two additional studies evaluated dietary interventions, such as the low-FODMAP diet, showing effectiveness in symptom relief. One study reviewed the use of complementary and alternative medicine (CAM) among IBS-D patients, though evidence supporting efficacy was limited. Overall,

curcumin appears to be a promising option for IBS-D symptom management, though further large-scale randomized controlled trials (RCTs) are needed. The potential role of curcumin within a broader treatment plan that includes dietary, and lifestyle changes should be explored further.

Keywords

IBS; Gastroenterology; Diarrhea; Turmeric; Dietary Interventions

Introduction

Irritable bowel syndrome with diarrhea (IBS-D) is a common functional gastrointestinal disorder characterized by chronic or recurrent abdominal pain, bloating, and diarrhea [1,12,13]. Affecting approximately 10–15% of the adult population worldwide, IBS-D can significantly impair quality of life and daily functioning [2,14,15]. Despite its prevalence, treatment options for IBS-D remain limited, and many patients seek alternative therapies to manage their symptoms. This has led to growing interest in the use of dietary supplements, particularly herbal remedies, as treatment options [3].

Curcumin, the active compound found in turmeric, has gained attention for its anti-inflammatory, antioxidant, and gut-modulating properties, making it a promising treatment for IBS-D management [4,16,17]. Several preliminary studies suggest that curcumin supplementation may help reduce symptoms of IBS, particularly abdominal pain, bloating, and diarrhea, but more evidence is needed to establish its efficacy compared to placebo [4,18-20].

This systematic review was conducted to evaluate the evidence surrounding curcumin supplementation in adults diagnosed with IBS-D. We aimed to determine whether daily supplementation with curcumin can effectively reduce abdominal pain, bloating, and diarrhea frequency. The focus of this review aligns with the increasing demand for evidence-based complementary therapies that offer safe, accessible, and effective alternatives to conventional IBS-D treatments, which often involve dietary restrictions and pharmacological interventions.

Materials and methods

Search terms created using Boolean operators were used to search on Ovid Medline, CINAHL, and Scopus databases. The search words used were, “irritable OR functional OR spastic OR nervous) W/4 (bowel OR colon* OR coliti*)) OR ibs* OR "muc*us coliti*" OR "splenic flexure syndrome") AND (curcum* OR turmeric* OR diferuloylmethane OR mervia).” The Ovid Medline, Cochrane, CINHAL, and Scopus database(s) resulted in 10, 74, 22 and 182 papers, respectively. All subsequent literature was collected, and a total of 51 duplicates was removed, resulting in 237 articles eligible to be screened. The initial screen was based on the papers’ relevance to the topic. Papers were removed if they were not about the topic we were researching, Curcumin as a treatment for patients with IBS-D. After the initial review, 40 papers were left, five of which were not retrieved, leaving 35 articles for review. The remaining 35 articles were reviewed and assessed based on our inclusion and exclusion criteria. Our inclusion criteria included any studies exploring the use of

curcumin as a treatment for IBS-D and conducted within the United States. Exclusion criteria included papers that did not focus on IBS (0 articles excluded), were not the correct type of article (4 articles excluded), and were not produced in the United States (25 articles excluded). This review led to a final number of n=6 papers that fit both the inclusion and exclusion criteria. The articles were consolidated, and limitations and potential future research were assessed, discussed, and recorded. Figure 1 shows a visual representation of the paper and data collection discussed here, using the PRISMA model.

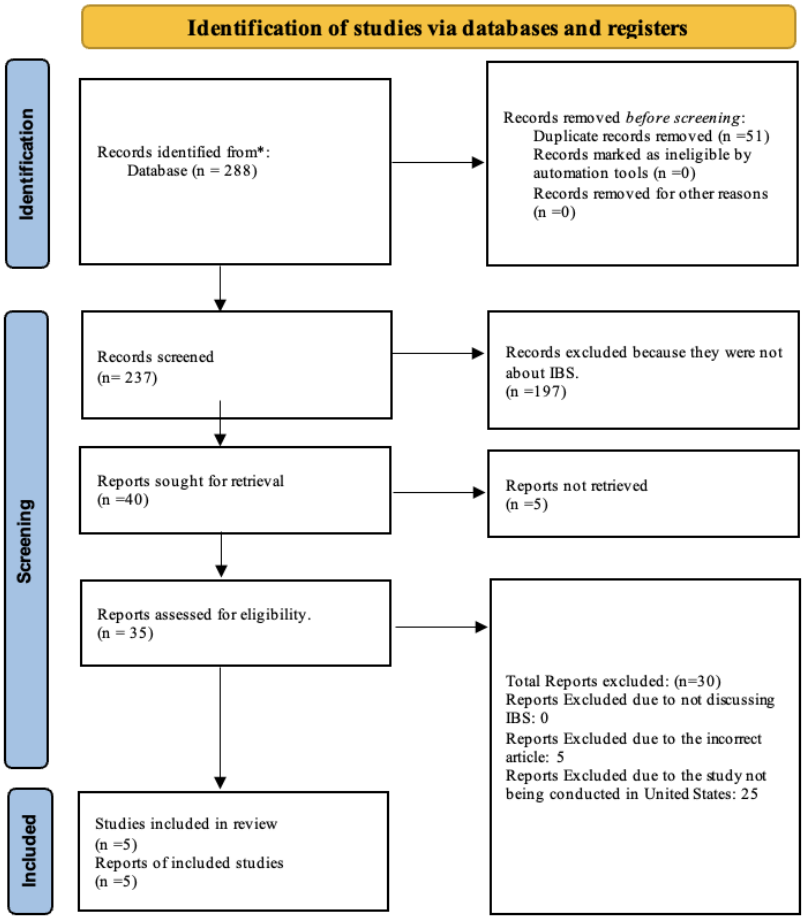

Figure 1. PRISMA Model Data Collection

Results

A total of six papers were included in this systematic review, all addressing complementary and alternative therapies for irritable bowel syndrome with diarrhea (IBS-D) in adults. These studies focused specifically on evaluating the impact of various interventions, including curcumin supplementation, on key IBS-D symptoms such as abdominal pain, bloating, and diarrhea frequency. The primary objective was to assess how curcumin supplementation compares to placebo.

We categorized the six papers into four distinct themes based on their focus and findings. Theme 1, Curcumin and Symptom Relief in IBS-D, includes one paper that specifically investigated curcumin's efficacy in managing abdominal pain, bloating, and diarrhea. Theme 2, Herbal and Alternative Remedies for IBS-D, includes one papers that examined the use of herbal supplements, such as turmeric and Ayurvedic. Theme 3, Dietary Interventions for IBS-D, included two papers discussing how dietary changes influence IBS-D symptoms. Finally, Theme 4, Complementary and Alternative Therapies for IBS-D, includes one paper that provided an overview of complementary therapies for IBS-D management. Table 1 provides a summary of the key findings from each study included in the review.

Theme 1: Curcumin and Symptom Relief in IBS-D

Turmeric Extract May Improve Irritable Bowel Syndrome Symptomology in Otherwise Healthy Adults: A Pilot Study

The study aimed to evaluate the effects of turmeric (Curcuma longa) extract on symptomology in otherwise healthy adults with Irritable Bowel Syndrome (IBS). Conducted as a partially blinded, randomized pilot study, it screened 500 volunteers for IBS using the Rome II criteria, ultimately randomizing 207 suitable participants. Subjects received either one or two tablets of a standardized turmeric extract daily for eight weeks. Results indicated a significant decrease in IBS prevalence in both dosage groups, dropping from 41% and 57% at screening to 53% and 60% after treatment, respectively ($p < 0.001$). Notably, the study recorded a significant reduction in abdominal pain/discomfort scores, showing a decrease of 22% and 25% in the one- and two-tablet groups, respectively ($p = 0.071$). Improvements were also seen across most IBS-related quality of life (IBSQOL) scales, with roughly two-thirds of participants reporting symptom improvement and a favorable change in bowel patterns; however, no significant differences between the two dosage groups were observed. The findings suggest that turmeric may be beneficial in reducing IBS symptoms, prompting the recommendation for placebo-controlled trials to validate these results. This research adds to the growing body of evidence supporting the potential role of turmeric as a therapeutic agent for IBS [5].

Theme 2: Herbal and Alternative Remedies for IBS-D

Efficacy and safety of ayurvedic herbs in diarrhea-predominant irritable bowel syndrome-a randomized controlled cross-over trial

The study investigated the efficacy of an Ayurvedic herbal preparation containing

curry, pomegranate, and turmeric in treating irritable bowel syndrome (IBS), a prevalent gastrointestinal disorder affecting up to 45% of the population. Conducted as a randomized, double-blind, placebo-controlled crossover trial, the research involved 32 patients who received the herbal preparation or a placebo over three treatment periods, each lasting four weeks, followed by a one-week washout phase. The primary outcome measured was symptom severity, assessed using the IBS Symptom Severity Score, while secondary outcomes included quality of life, psychological distress, and safety. Results showed no significant differences between the verum and placebo groups for symptom severity, with responder rates of 18.9% for the herbal preparation compared to 31.1% for the placebo. Compliance was moderate, with two-thirds of patients being highly compliant, and a total of nine minor adverse events were reported, primarily in the verum phase. The conclusion drawn from the study is that the Ayurvedic herbal preparation tested does not demonstrate any greater efficacy than placebo in alleviating IBS symptoms, though it was found to be safe for use [6].

Theme 3: Dietary Interventions for IBS-D

Case Report: Initial Successful Treatment of Migraine and Irritable Bowel Syndrome With a Low-FODMAP Diet

A 57-year-old woman with refractory migraines and IBS underwent a low-FODMAP diet (LFD) under dietician guidance. Initially, she reported 80/90 migraine days with severe pain and IBS symptoms rated at 9/10. Within one week on the LFD, both her

migraines and IBS symptoms improved. After five weeks, the patient experienced significant reductions in both migraine frequency and intensity, with pain down to 1/10 and IBS severity at 3/10. Disability scores also improved from severe to minimal. This case suggests that LFD may be beneficial for managing gut-brain axis disorders like migraines and IBS, calling for larger trials to confirm these findings [7].

Influence of Dietary Restriction on Irritable Bowel Syndrome

The growing recognition of dietary impacts on Irritable Bowel Syndrome (IBS) has led to increased scrutiny of specific food restrictions, including gluten, lactose, short-chain carbohydrates, and spicy foods. IBS patients often attribute their symptoms, such as abdominal pain and changes in bowel habits, to dietary intake, prompting many to limit certain foods to alleviate post-prandial discomfort. Literature reviews reveal mixed results regarding dietary manipulations; for instance, while some studies indicate that gluten exposure exacerbates symptoms, others suggest that carbohydrate components in wheat may play a more significant role than gluten itself. The validity of lactose intolerance diagnoses is also debated, as hydrogen breath tests may reflect underlying conditions like small intestinal bacterial overgrowth. Investigations into the effects of spicy foods, particularly those containing capsaicin, present conflicting evidence, with some trials reporting increased abdominal pain after acute exposure while others indicate potential benefits from chronic consumption. Turmeric, with its active compound curcumin, shows promise in managing IBS symptoms, particularly when combined with fennel essential oils.

Additionally, soluble fibers have been identified as beneficial, especially for constipation-predominant IBS, whereas the overall effects of dietary fiber on abdominal symptoms remain less clear [8].

Theme 4: Complementary and Alternative Therapies for IBS-D

Complementary and Alternative Medicine Therapies for Irritable Bowel Syndrome

Complementary and alternative medicine (CAM) is frequently used by patients with IBS, but several factors complicate provider counseling. These include limited communication about CAM use, a lack of robust evidence, and insufficient regulation. CAM therapies are categorized into natural products (e.g., herbs, probiotics) and mind-body medicine (e.g., yoga, hypnotherapy). Studies show that CAM use is common, though evidence supporting its effectiveness for IBS remains weak. Providers should routinely ask IBS patients about CAM use, despite these limitations, and provide guidance where appropriate, as CAM often helps patients feel in control of their symptoms [9].

Table 1. Summary of Each Article Included in the Review

Title	Study Summary	Study Design and Population	Outcome Measures
Case Report: Initial Successful Treatment of Migraine and Irritable Bowel Syndrome With a Low-FODMAP Diet [5]	The aim of this study is to investigate the therapeutic potential of a low-FODMAP diet (LFD) in reducing migraine symptoms in a postmenopausal woman with comorbid irritable bowel syndrome (IBS), exploring the underlying mechanisms related to gut–brain axis dysfunction and the efficacy of dietary intervention as a novel treatment approach.	The study employs a case report design focused on a 57-year-old postmenopausal woman with a history of chronic migraines and irritable bowel syndrome (IBS) who underwent a low-FODMAP diet intervention under the guidance of a dietician.	Use of the Migraine Disability Assessment (MIDAS) score, Headache Impact Test (HIT-6) score, and mean IBS Symptom Severity score, all of which indicated significant improvements following the low-FODMAP diet intervention.
Efficacy and safety of Ayurvedic herbs in diarrhoea-predominant irritable bowel syndrome: A randomised controlled crossover trial [6]	The aim of this study was to rigorously evaluate the efficacy and safety of a specific Ayurvedic herbal preparation consisting of curry, pomegranate, and turmeric in treating irritable bowel syndrome (IBS) to compare symptom severity and quality of life outcomes between the herbal treatment and a placebo group over multiple treatment periods.	The study employed a randomized double-blind placebo-controlled crossover design, enrolling 32 patients (19 females, mean age 50.3 ± 11.9 years) with irritable bowel syndrome (IBS), who participated in three treatment periods alternating between an Ayurvedic herbal preparation and a placebo, each administered for four weeks with a one-week washout phase in between.	Symptom severity (IBS Symptom Severity Score), quality of life, psychological distress, and safety.
Influence of Dietary Restriction on Irritable Bowel Syndrome [7]	The aim of this study is to evaluate the effects of various dietary interventions, including low FODMAP, gluten, lactose, spicy foods, curcumin supplementation, and dietary fiber, on gastrointestinal symptoms and overall symptom management in individuals with irritable bowel syndrome (IBS), while considering the mixed evidence on their efficacy and potential long-term implications.	Trials and observational studies examining how different diets affect IBS symptoms in people with different IBS subtypes.	Improvements in gastrointestinal symptoms (abdominal pain, bloating, stool consistency, frequency, urgency), changes in symptom severity scores, gut transit time, and quality of life, as well as alterations in biomarkers like breath hydrogen levels and nutrient levels (e.g., retinol, thiamin).
Turmeric extract may improve irritable bowel syndrome symptomology in otherwise healthy adults: a pilot study [8]	The aim of this study is to evaluate the effectiveness of turmeric extract in reducing the symptomatology of irritable bowel syndrome (IBS) in otherwise healthy adults by assessing changes in IBS prevalence, symptom-related quality of life, and self-reported symptom improvement over an 8-week intervention period.	Partially blinded, randomized, two-dose pilot design with a population of 207 volunteers diagnosed with irritable bowel syndrome (IBS) based on the Rome II criteria.	IBS prevalence, symptom-related quality of life (IBSQOL), and self-reported effectiveness of the turmeric extract treatment.
Complementary and Alternative Medicine Therapies for Irritable Bowel Syndrome [9]	The aim of this study is to evaluate the efficacy, safety, and mechanisms of action of various complementary and alternative medicine (CAM) therapies, including yoga, acupuncture, and manual therapy, in managing symptoms and improving the quality of life for patients with irritable bowel syndrome (IBS), while addressing the regulatory challenges and research gaps associated with these interventions.	The study design includes systematic reviews and randomized controlled trials (RCTs) involving patients with irritable bowel syndrome (IBS), with participant numbers ranging from 273 to 1,806 across various studies evaluating complementary and alternative medicine therapies.	Severity of bowel symptoms, IBS severity scoring system (IBS-SSS) scores, anxiety levels, quality of life, physical functioning, and incidence of adverse events.

Discussion

The findings from the six studies included in this review suggest a promising role for curcumin in managing the symptoms of IBS-D, particularly in reducing abdominal pain and bloating. One study specifically investigated curcumin supplementation found a significant decrease in patient-reported symptom severity compared to placebo [8]. These findings are consistent with curcumin's known anti-inflammatory and gut-modulating effects, which likely contribute to its ability to improve

gastrointestinal symptoms [10]. Additionally, curcumin's relatively safe profile, with few reported adverse effects, makes it alternative or adjunct therapy for individuals for IBS-D symptoms [11].

While the studies reviewed showed reductions in symptoms, the results varied in terms of the magnitude of improvements, with some trials showing only slight effects. Most of the studies were pilot trials or small-scale randomized controlled trials (RCTs), limiting the generalizability of the findings to broader populations. The variability in study designs, dosing regimens, and outcome measures also complicates direct comparisons between the trials. Therefore, future research should include This larger, more rigorously designed RCTs to confirm the therapeutic efficacy of curcumin in IBS-D.

The role of curcumin in the broader context of IBS-D management must be considered alongside other IBS-D therapies. The studies examining dietary interventions, such as the low-FODMAP diet, highlighted the importance of addressing dietary triggers in managing IBS-D symptoms [7]. While curcumin may offer benefits, it is likely most effective when integrated into a multifaceted approach. Future research should explore the combined effects of curcumin with these therapies to determine the most effective treatment for IBS-D patients.

Conclusion

The evidence from this review suggests that curcumin supplementation may be a safe and moderately effective option for managing key symptoms of IBS-D, including abdominal pain, bloating, and diarrhea. However, larger studies are needed to fully establish its therapeutic benefits. While curcumin offers promise as part of a comprehensive approach to IBS-D management, it is likely most beneficial when used in conjunction with other interventions.

Abbreviations

IBS-D: Irritable bowel syndrome with diarrhea

CAM: Complementary and Alternative Medicine

RCTs: Randomized Controlled Trials

IBSQOL: IBS-related quality of life

LFD: low-FODMAP diet

Ethical approval

Not applicable.

Consent to participate

Not applicable.

Consent to publication

Not applicable.

Availability of data and materials

Not applicable.

References

1. Lacy BE. Diagnosis and treatment of diarrhea-predominant irritable bowel syndrome. Int J Gen Med. 2016 Feb 11;9:7-17. doi: 10.2147/IJGM.S93698.

2. Irritable bowel syndrome (IBS): ACG [Internet]. American College of Gastroenterology. 2024 [cited 2024 Oct 20]. Available from:

https://gi.org/topics/irritable-bowel-syndrome/#:~:text=How%20Common%20is%20IBS%3F,get%20IBS%20easier%20than%20men.

3. Grundmann O, Yoon SL. Complementary and alternative medicines in irritable bowel syndrome: an integrative view. World J Gastroenterol. 2014 Jan 14;20(2):346-62. doi: 10.3748/wjg.v20.i2.346. PMID: 24574705; PMCID: PMC3923011.
4. Ng QX, Soh AYS, Loke W, Venkatanarayanan N, Lim DY, Yeo WS. A Meta-Analysis of the Clinical Use of Curcumin for Irritable Bowel Syndrome (IBS). J Clin Med. 2018 Sep 22;7(10):298. doi: 10.3390/jcm7100298.
5. Bundy R, Walker AF, Middleton RW, Booth J. Turmeric extract may improve irritable bowel syndrome symptomology in otherwise healthy adults: a pilot study. J Altern Complement Med. 2004 Dec;10(6):1015-8. doi: 10.1089/acm.2004.10.1015.
6. Lauche R, Kumar S, Hallmann J, Lüdtke R, Rampp T, Dobos G, Langhorst J. Efficacy and safety of Ayurvedic herbs in diarrhoea-predominant irritable bowel syndrome: A randomised controlled crossover trial. Complement Ther Med. 2016 Jun;26:171-7. doi: 10.1016/j.ctim.2016.04.002.
7. Bonakdar RA, Sweeney MM, Garvey C, White AA, VanNoord MU. Case Report: Initial Successful Treatment of Migraine and Irritable Bowel Syndrome With a Low-FODMAP Diet. J Am Nutr Assoc. 2024 May-Jun;43(4):339-344.

8. Kamal A, Pimentel M. Influence of Dietary Restriction on Irritable Bowel Syndrome. Am J Gastroenterol. 2019 Feb;114(2):212-220. doi: 10.1038/s41395-018-0241-2.

9. Shapiro JM, Deutsch JK. Complementary and Alternative Medicine Therapies for Irritable Bowel Syndrome. Gastroenterol Clin North Am. 2021 Sep;50(3):671-688. doi: 10.1016/j.gtc.2021.03.009.

10. Serra D, Almeida LM, Dinis TCP. Polyphenols in the management of brain disorders: Modulation of the microbiota-gut-brain axis. Adv Food Nutr Res. 2020;91:1-27. doi: 10.1016/bs.afnr.2019.08.001.

11. Wade U, Pascual-Figal DA, Rabbani F, Ernst M, Albert A, Janssens I, Dierckxsens Y, Iqtadar S, Khokhar NA, Kanwal A, Khan A. The Possible Synergistic Pharmacological Effect of an Oral Berberine (BBR) and Curcumin (CUR) Complementary Therapy Alleviates Symptoms of Irritable Bowel Syndrome (IBS): Results from a Real-Life, Routine Clinical Practice Settings-Based Study. Nutrients. 2024 Apr 18;16(8):1204. doi: 10.3390/nu16081204.

12. Altomare A, Di Rosa C, Imperia E, Emerenziani S, Cicala M, Guarino MP. Diarrhea predominant-irritable bowel syndrome (IBS-D): effects of different nutritional patterns on intestinal dysbiosis and symptoms. Nutrients. 2021 Apr 29;13(5):1506.

13. Carrasco-Labra A, Lytvyn L, Falck-Ytter Y, Surawicz CM, Chey WD. AGA technical review on the evaluation of functional diarrhea and diarrhea-predominant irritable bowel syndrome in adults (IBS-D). Gastroenterology. 2019 Sep 1;157(3):859-80.

14. Jung HK, Locke III RG, Schleck CD, Zinsmeister AR, Talley NJ. Diarrhea-predominant irritable bowel syndrome is associated with diverticular disease: a population-based study. Official journal of the American College of Gastroenterology| ACG. 2010 Mar 1;105(3):652-61.

15. Camilleri M. Diagnosis and treatment of irritable bowel syndrome: a review. Jama. 2021 Mar 2;325(9):865-77.

16. Menon VP, Sudheer AR. Antioxidant and anti-inflammatory properties of curcumin. The molecular targets and therapeutic uses of curcumin in health and disease. 2007 Jan 1:105-25.

17. Boroumand N, Samarghandian S, Hashemy SI. Immunomodulatory, anti-inflammatory, and antioxidant effects of curcumin. Journal of Herbmed Pharmacology. 2018 Oct 6;7(4):211-9.

18. Atefi M, Darand M, Entezari MH, Jamialahmadi T, Bagherniya M, Sahebkar A. A systematic review of the clinical use of curcumin for the management of gastrointestinal diseases. Studies on Biomarkers and New Targets in Aging Research in Iran. 2021:295-326.

19. Giacosa A, Riva A, Petrangolini G, Allegrini P, Fazia T, Bernardinelli L, Peroni G, Rondanelli M. Beneficial effects on abdominal bloating with an innovative food-grade formulation of Curcuma longa and Boswellia serrata extracts in subjects with irritable bowel syndrome and small bowel dysbiosis. Nutrients. 2022 Jan 18;14(3):416.

20. Conteas CN, Panossian AM, Tran TT, Singh HM. Treatment of HIV-associated diarrhea with curcumin. Digestive diseases and sciences. 2009 Oct;54:2188-91.