sciendo

REVIEW

Biul Gł Bibl Lek
2025, Iss. 384, pp.
DOI 10.2478/bgbl-2025-0004

# Effectiveness of phytotherapy in the treatment of IBS

## Skuteczność fitoterapii w leczeniu zespołu jelita drażliwego

**Monika Ziemba[1*], Katarzyna Majewska[1], Jakub Kamiński[1]**

[1]*Medical University of Warsaw, Warsaw, Poland*

[*]**Correspondence:**

**Abstract:**

Irritable bowel syndrome (IBS) is a common functional disorder of the gastrointestinal tract, often characterised by recurrent abdominal discomfort, pain, bloating, and irregular bowel movements, which significantly affects the patient's quality of life. Its multiple causes, including increased intestinal sensitivity, microbial imbalance, and abnormal bowel function, make treatment complex. The use of herbal therapies is becoming increasingly common as a way to effectively manage the symptoms associated with irritable bowel syndrome. A review of existing literature, including randomized controlled trials and meta-analyses, was conducted to evaluate the effectiveness of Iberogast, peppermint, turmeric, fennel (Foeniculum vulgare), ginger in treating IBS. Databases such as PubMed and the Cochrane Library were used to collect relevant studies. The main focus was on improvements in key IBS symptoms such as pain, bloating, and bowel function. This systematic review suggests that herbal remedies may have potential benefits in the management of IBS. Iberogast and other herbal remedies showed significant benefits in reducing IBS-related symptoms, with minimal side effects. These herbal treatments, by targeting several factors associated with IBS, hold promise for symptom management. While the initial results are promising, further long-term studies are needed to confirm their sustained efficacy and explore their integration into comprehensive IBS treatment plans.


Revided 30.04.2025 Accepted 08.05.2025

**Keywords:** irritable bowel syndrome; IBS; STW5; Iberogast; *Peppermint*; *Mentha piperita*; Turmeric; *Curcuma longa*; Fennel; *Foeniculum vulgare*; Ginger; *Zingiber officinale*

**Streszczenie:**

Zespół jelita drażliwego (IBS) jest powszechnym czynnościowym zaburzeniem przewodu pokarmowego, często charakteryzującym się nawracającym dyskomfortem lub bólem brzucha, wzdęciami oraz nieregularnym rytmem wypróżnień, co znacząco wpływa na jakość życia pacjentów. Wieloczynnikowa etiologia tego schorzenia, obejmująca m.in. nadwrażliwość trzewną, zaburzenia mikrobioty jelitowej oraz nieprawidłową motorykę jelit, czyni leczenie skomplikowanym. Coraz częściej w terapii IBS stosuje się fitoterapię jako sposób na skuteczne łagodzenie objawów choroby. Przeprowadzono przegląd literatury obejmujący randomizowane badania kontrolowane oraz metaanalizy, w celu oceny skuteczności takich środków jak Iberogast, mięta pieprzowa, kurkuma, koper włoski (Foeniculum vulgare) oraz imbir w leczeniu zespołu jelita drażliwego. Do wyszukiwania odpowiednich publikacji wykorzystano bazy danych takie jak PubMed oraz Cochrane Library. Szczególny nacisk położono na analizę poprawy kluczowych objawów IBS, takich jak ból brzucha, wzdęcia i zaburzenia rytmu wypróżnień. Wyniki niniejszego przeglądu systematycznego sugerują, że preparaty ziołowe mogą przynosić istotne korzyści w leczeniu objawów zespołu jelita drażliwego. Iberogast oraz inne preparaty ziołowe wykazały istotną skuteczność w redukcji objawów IBS przy jednoczesnym minimalnym ryzyku działań niepożądanych. Działając na wiele mechanizmów patofizjologicznych związanych z IBS, terapie ziołowe wykazują obiecujący potencjał terapeutyczny. Pomimo pozytywnych wyników, niezbędne są dalsze, długoterminowe badania w celu potwierdzenia trwałości efektów terapeutycznych oraz określenia ich miejsca w kompleksowych planach leczenia IBS.

**Słowa kluczowe:** zespół jelita drażliwego; IBS; STW5; Iberogast; mięta pieprzowa; *Mentha piperita*; kurkuma; *Curcuma longa*; koper włoski; *Foeniculum vulgare*; imbir; *Zingiber officinale*

## Introduction

Irritable Bowel Syndrome (IBS) is a chronic functional gastrointestinal disorder that manifests as episodes of abdominal pain, bloating, and abdominal bowel function. The disorder is further classified into subtypes based on the predominant symptoms: IBS with diarrhea (IBS-D), IBS with constipation (IBS-C), and mixed IBS (IBS-M), where symptoms alternate between constipation and diarrhea.

The pathogenesis of IBS is multifaceted, involving a combination of physiological and psychological factors. Key contributors include visceral hypersensitivity (increased sensitivity to pain and discomfort in the gastrointestinal tract), abnormal gut motility, dysfunction in the gut-brain axis, and imbalances in the gut microbiota.

Additionally, psychological stress and anxiety play significant roles in exacerbating IBS symptoms, creating a complex interplay between mental health and gastrointestinal function.

Despite the high prevalence of IBS, its treatment remains challenging due to the heterogeneous nature of its symptoms. Standard therapeutic approaches include dietary interventions (such as the low FODMAP diet), fiber supplementation, pharmacological treatments (e.g., antispasmodics, laxatives, antidepressants), and psychological therapies. However, these treatments often provide incomplete relief and may cause side effects, leading many patients to explore alternative therapeutic options.

Phytotherapy, the use of plant-based medical treatments, has become increasingly popular in managing IBS. Herbal preparations such as Iberogast (STW 5), a well-researched formulation containing extracts from nine medicinal plants, have been extensively studied for their anti-inflammatory, spasmolytic, and prokinetic properties and have gained recognition for its potential to alleviate the full spectrum of IBS symptoms. Other herbal remedies, such as peppermint oil, have also demonstrated efficacy in reducing IBS symptoms, particularly in alleviating abdominal pain and discomfort through their antispasmodic action.

This publication aims to provide a comprehensive review of the current evidence regarding the use of Iberogast and other phytotherapeutic agents in the treatment of IBS by synthesizing data from various clinical trials and observational studies. This research aims to clarify their role in the treatment of IBS and contribute to the growing body of evidence supporting phytotherapy as a viable alternative or complementary treatment for IBS.

## Materials and Methods

The objective of this review is to evaluate the efficacy of a number of selected preparations in the treatment of irritable bowel syndrome (IBS) based on the available evidence. The review concentrates on phytotherapeutics, including Iberogast, peppermint, turmeric, fennel (Foeniculum vulgare), ginger. The data used to adequately represent the issue were sourced from peer-reviewed journals, clinical trials, and meta-analyses published in databases such as PubMed, the Cochrane Library, and ScienceDirect.

**Iberogast (STW5)**

Iberogast is a complex preparation based on 9 herbal ingredients. It consists of a fresh plant extract of Iberis amara, Chelidonii herba, Cardui mariae fructus, Liquiritiae radix, Angelicae radix, Matricariae flos, Menthae piperitae folium.

In a study conducted by A. Madisch et al. (2004) on 208 patients diagnosed with irritable bowel syndrome, 51 received the commercially available herbal preparation STW 5, 52 received the investigational herbal preparation STW 5-II, 53 received bitter candytuft mono-extract and 52 received placebo. The primary variables of interest were changes in total abdominal pain and irritable bowel syndrome symptoms. A total of 203 patients completed the study. The results demonstrated that both STW 5 and STW 5-II were significantly more effective than the placebo in reducing the total abdominal pain score and irritable bowel syndrome symptoms after 4 weeks. No statistically significant differences were observed between the bitter candytuft mono-extract and the placebo group. The study demonstrated that the commercially available herbal preparation STW 5 and its investigational preparation STW 5-II are efficacious in the treatment of irritable bowel syndrome [1].

The primary objective of the study conducted by Aguilar et al. (2024) was to assess the impact of Iberogast on colonic gas tolerance in individuals diagnosed with IBS. Two gas provocation tests were conducted on 10 IBS patients following a two-week course of treatment with STW5 and a placebo. The provocation test entailed the continuous infusion of gas into the colon (24 ml/min for 60 minutes), followed by a 30-minute period of free evacuation. The evacuation of gas, the sensation of symptoms and the sensation of abdominal bloating were recorded continuously. The administration of gas into the colon was found to be associated with an increase in the perception of abdominal symptoms. This was observed to be significantly greater in patients who received a placebo (score increase of $4.0 \pm 0.3$) compared to those who received STW5 (score increase of $3.2 \pm 0.4$; $p = 0.035$). The study demonstrated that STW5 enhances the tolerance of gas in the colon of patients with irritable bowel syndrome who experience bloating, without a notable impact on gas retention and drainage. The findings are encouraging, yet the study had a limited number of participants. Consequently, further investigations are warranted to substantiate these observations [2].

The objective of the study conducted by Müller et al. (2006) was to analyze whether STW 5 has the capacity to diminish afferent intestinal sensitivity within the upper gastrointestinal tract, given that visceral hypersensitivity represents a significant underlying mecha-

nism of functional gastrointestinal disorders. The study was conducted on two groups of male Wistar rats, which were pretreated with the STW 5 preparation or its vehicle (30.8% ethanol). Following a two-hour period, pentobarbitone (60 mg $kg^{-1}$ i.p.) was administered to induce general anaesthesia. Extracellular recordings were obtained from mesenteric afferents innervating the proximal part of the jejunum. The response of the afferent nerve to progressively increasing doses of 5-HT and bradykinin was quantified, as well as the afferent discharge following the gradual dilation of the adjacent intestinal loop from 0 to 60 cm $H_2O$. The results of the study indicated that the level of afferent discharge to 5-HT and bradykinin increased in proportion to the dosage administered. Following administration of various doses of 5-HT, the peak efferent nerve discharge exhibited consistent decreases in the presence of pretreatment with STW 5, in comparison to the vehicle control group. In regard to bradykinin, it was observed that the afferent responses were diminished following the administration of STW 5 at doses of 20 and 40 mg kg^ (−1), though not at 10 mg kg^ (−1). It was demonstrated that the dilation of the enteric loop resulted in an increase in afferent enteric nerve discharge. However, this increase was consistently lower in the STW 5 pretreatment group in comparison to the vehicle control group, with the exception of the discharge rate at pressures of 0 and 20 cm $H_2O$. In summary, the findings of this study indicate that the responsiveness of intestinal afferents to mechanical and chemical stimuli is attenuated following treatment with STW5. This mechanism may contribute to a greater understanding of the alleviating effect of STW5 on dyspeptic and intestinal symptoms in patients [3].

### Peppermint (Mentha piperita)

Peppermint oil has been the subject of research in the field of modern medicine, particularly with regard to its potential benefits for gastrointestinal health.

A randomized, double-blind, placebo-controlled study by Merat et al. (2009) was conducted to investigate the efficacy of Colpermin in relieving symptoms and improving quality of life in patients with IBS. The study comprised 90 patients, who were divided into two groups of 45 participants each. The participants were instructed to ingest one dose of enteric-coated delayed-release peppermint oil (Colpermin) or a placebo three times a day for a period of eight weeks. Following the initial, fourth, and eighth weeks, patients underwent assessment to ascertain any alterations in their symptoms and quality of life. The number of patients free of abdominal pain or discomfort demonstrated a statistically significant change from 0 at week 0 to 14 at week 8 in the

Colpermin group and from 0 to 6 in the control group ($P < 0.001$). Furthermore, a notable reduction in the intensity of abdominal discomfort was evident in the Colpermin cohort, accompanied by a substantial enhancement in quality of life. No significant adverse effects were observed. The study did not report any efficacy of Colpermin in the treatment of diarrhea, constipation or flatulence. This suggests that patients with IBS should be treated in accordance with their underlying symptoms, and that a single therapeutic approach is unlikely to be effective in all cases of IBS. It is essential that the approach be tailored to the individual [4].

A study by Cappello et al. (2007) tested the efficacy of peppermint oil in the treatment of irritable bowel syndrome (IBS). Many studies on this topic have been shown to be inconsistent. This is probably due to the inclusion of patients with underlying conditions such as small bowel bacterial overgrowth, lactose intolerance or celiac disease, which can present with symptoms similar to those of IBS. Accordingly, patients with these conditions were excluded from the study. A total of 57 patients diagnosed with irritable bowel syndrome (IBS) according to the Rome II criteria participated in the study. In order to be eligible for inclusion in the study, participants were required to have a normal breath test for lactose and lactulose, as well as the absence of antibodies to coeliac disease. The participants were randomly assigned to receive either peppermint oil (two enteric-coated capsules twice daily) or a placebo for a four-week period in a double-blind study. The symptoms were evaluated at three time points: prior to the commencement of treatment (T0), following the initial four-week period (T4), and four weeks after the conclusion of treatment (T8). The symptoms assessed included abdominal bloating, abdominal pain or discomfort, diarrhea, constipation, a feeling of incomplete bowel movement, pain during defecation, expulsion of gas or mucus, and urgency to defecate. The intensity and frequency of each symptom were rated on a scale of 0 to 4. Additionally, a total irritable bowel syndrome symptom score was calculated as the mean value of the sum of the mean intensity and frequency scores of each symptom. At T4, 75% of patients in the peppermint oil group exhibited a reduction in their baseline (T0) total irritable bowel syndrome symptom score of >50% compared with 38% in the placebo group ($P < 0.009$). The administration of peppermint oil at T4 and T8 in comparison to T0 resulted in a notable reduction in the total irritable bowel syndrome symptom score, whereas no change was observed in the placebo group. These findings suggest that a four-week course of peppermint oil may offer beneficial effects in alleviating abdominal symptoms in patients with irritable bowel syndrome [5].

### Turmeric (Curcuma longa) and Fennel (Foeniculum vulgaree)

Turmeric (Curcuma longa) and fennel (Foeniculum vulgare) are two well-known medicinal plants with a long history of use in traditional and herbal medicine for their health benefits.

A study by Di Ciaula et al. (2018) examined the efficacy of turmeric extracts and fennel essential oil (Enterofytol®) in patients with IBS. A total of 211 patients were enrolled in the study, with 14% exhibiting predominant diarrhea (IBS-D), 24% predominant constipation (IBS-C), and 62% mixed (IBS-M). They were administered two capsules twice a day for a period of one month, followed by two capsules once daily for an additional month. Prior to and following the administration of Enterofytol®, the subjects completed questionnaires designed to assess symptom severity and quality of life. There was an observable inverse relationship between the IBS Severity Index and Quality of Life (QoL) scores. A notable reduction in symptom severity and an improvement in quality of life were observed across all IBS subgroups. Although patients with IBS-D exhibited the most severe clinical presentation at baseline (with the highest IBS severity index and lowest QoL score) compared to the IBS-C and IBS-M subtypes, the treatment response was most pronounced in this group in terms of both outcomes. The improvement in IBS score was not influenced by age or gender. The findings of this study indicate that the combination of turmeric and fennel oil for a period of two months is associated with improvements in both symptoms and quality of life in patients with IBS, irrespective of age, gender, initial symptom severity, and IBS subtypes. This suggests a potential role for this combination in the natural treatment of IBS [6].

A study conducted by Portincasa et al. (2016) evaluated the efficacy and tolerability of a combination of turmeric and fennel essential oil (CU-FEO) in alleviating symptoms associated with irritable bowel syndrome (IBS). The study cohort comprised 121 patients with a score of 100-300 on the Irritable Bowel Syndrome-Severity Scale (IBS-SSS) and 30-70 on the 100-mm visual analogue scale (VAS). The patients were randomly assigned to one of two groups: one received CU-FEO, and the other received a placebo. Each subject was administered two capsules twice daily for a period of 30 days. The primary endpoint was the mean reduction in IBS-SSS at the conclusion of the treatment period, adjusted for the mean baseline score (relative decrease). The impact of the intervention on quality of life was evaluated using the IBS-QoL questionnaire. The results demonstrated that CU-FEO was safe, well tolerated, and resulted in symptom relief in patients with IBS. A statistically significant reduction in the mean relative IBS-SSS was observed at the conclusion of the 30-day treatment period ($P < 0.001$). This outcome was accompanied by a reduc-

tion in abdominal discomfort and all other symptoms, as measured by the IBS-SSS. The proportion of patients who were free from symptoms was significantly greater in the CU-FEO group than in the placebo group (P = 0.005). All IBS-QoL domains demonstrated a consistent pattern of improvement. It can be concluded that CU-FEO significantly improved symptoms and quality of life in IBS patients within 30 days [7].

### Ginger (Zingiber officinale)

Ginger, a traditional herbal medicine, is known for its anti-inflammatory and gastrointestinal effects.

The objective of the study conducted by Zhang et al. (2020) was to assess the efficacy of ginger and its active compound, 6-gingerol, in alleviating symptoms associated with IBS-D and to elucidate the underlying mechanisms. The study initially employed a well-established rat model of IBS-D. The rats were administered varying doses of ginger extract and 6-gingerol. The severity of the symptoms was evaluated through the measurement of defecation frequency, fecal water content, and abdominal withdrawal reflex (AWR) scores. Histopathological and molecular analyses were conducted to evaluate colonic inflammation and NF-κB pathway activation. The level of statistical significance was determined by one-way analysis of variance (ANOVA), with a p-value of less than 0.05 considered to be statistically significant. A rat model of IBS-D was created through the utilisation of chemical stimulation and acute and chronic pressure stimulation. A reduction in both defecation frequency and faecal water content was observed during the course of the ginger treatment. Additionally, the AWR was observed to decrease. The results of the histopathological analysis demonstrated the efficacy of ginger treatment in reducing colonic oedema and promoting the reversal of inflammation in rats with IBS-D. This effect is comparable to that of rifaximin. ELISA and RT-qPCR analyses revealed that ginger inhibits the expression of pro-inflammatory factors, including TNF-α, IL-6, and iNOS. Western blot analysis revealed that the expression of IkBα was increased while that of p-p65 was inhibited during the course of ginger treatment. The HPLC analysis demonstrated that 6-gingerol was the primary compound in ginger that exhibited the capacity to enhance clinical symptoms in IBS-D rats. 6-gingerol was observed to suppress the expression of pro-inflammatory factors (TNF-α, IL-6, iNOS) in colonic epithelial cells through the utilisation of Western blot and RT-qPCR techniques. Additionally, the degradation of IκBα and p65 phosphorylation, which are integral elements of the NF-κB pathway, were found to be inhibited. The findings of this study are encouraging and sug-

gest that ginger and 6-gingerol may serve as promising protective agents for individuals with IBS and predominant diarrhoeal symptoms. Nevertheless, further investigation is required to gain a deeper understanding of the mechanisms through which ginger and 6-gingerol exert their protective effects on the intestinal barrier [8].

In a study published by Miranda A. L. van Tilburg et al. in 2014, the effect of ginger on IBS symptoms was assessed. The study was a randomized, double-blind trial in which 45 IBS patients were randomly allocated to three groups: the first received a placebo, the second 1 g of ginger, and the third 2 g of ginger daily for 28 days. The efficacy of the treatment was assessed using the IBS Severity Scale (IBS-SS) and the Adequate Symptom Relief Scale. A treatment response was defined as a reduction in the IBS-SS of at least 25% after the conclusion of the treatment period. A response was reported in 57.1% of patients in the placebo treatment group, compared with 46.7% in the 1g ginger treatment group and 33.3% in the 2g ginger treatment group ($p > .05$). Adequate relief was reported by 53.3% of those taking the placebo, and 53.3% in both ginger groups combined ($p > .05$). Mild side effects were reported by 35.7% in the placebo group and 16.7% in the ginger group. These findings suggest that ginger is a well-tolerated drug, but that it does not provide better effects than placebo. Further research is needed to confirm its efficacy [9].

## Summary

A review of the scientific literature indicates that phytotherapy has the potential to be an effective treatment for irritable bowel syndrome (IBS), particularly when using herbal preparations such as Iberogast (STW5), peppermint oil (Mentha piperita), turmeric (Curcuma longa), fennel (Foeniculum vulgare) and ginger (Zingiber officinale). The results of the Iberogast study demonstrated a statistically significant reduction in abdominal discomfort and other IBS symptoms when compared to the placebo. The administration of peppermint oil in the form of delayed-release capsules resulted in a notable reduction in pain and discomfort, thereby enhancing the quality of life for individuals diagnosed with IBS. A preparation of turmeric and fennel was also found to be effective in improving quality of life and relieving symptoms, regardless of the predominant type of IBS. Ginger, particularly its active compound 6-gingerol, has demonstrated efficacy in alleviating IBS-D symptoms, including bowel frequency, intestinal inflammation, and colonic swelling. The results of these studies are comparable to the efficacy of rifaximin, which suggests that ginger may act as an effective alternative or adjunct in the treatment of IBS-D. However, some studies did not demonstrate a statistically significant difference between the effects

of ginger and the placebo, highlighting the necessity for further, more advanced studies to confirm the long-term efficacy of these herbs in the treatment of IBS. These findings indicate the need for additional clinical trials that could not only confirm the efficacy of phytotherapy in different subtypes of IBS, but also, to better understand the mechanisms of action of the different plant constituents.

**Conflict of interest:** The authors do not declare any conflict of interest.

**References:**

1. Madisch, A., Holtmann, G., Plein, K., & Hotz, J. (2004). Treatment of irritable bowel syndrome with herbal preparations: Results of a double-blind, randomized, placebo-controlled, multi-centre trial. *Alimentary Pharmacology & Therapeutics, 19*(8), 957-965. https://doi.org/10.1111/j.1365-2036.2004.01859.x

2. Aguilar, A., Benslaiman, B., & Serra, J. (2019). Effect of Iberogast (STW5) on tolerance to colonic gas in patients with irritable bowel syndrome: A randomized, double-blind, placebo-controlled clinical trial. *Neurogastroenterology & Motility, 31*(6), e14765. https://doi.org/10.1111/nmo.14765

3. Müller, M. H., Liu, C.-Y., Glatzle, J., Weiser, D., Kelber, O., Enck, P., Grundy, D., & Kreis, M. E. (2006). STW 5 (Iberogast) reduces afferent sensitivity in the rat small intestine. *Phytomedicine, 13*(9-10), 633-639. https://doi.org/10.1016/j.phymed.2006.03.014

4. Merat, S., Khalili, S., Mostajabi, P., Ghorbani, A., Ansari, R., & Malekzadeh, R. (2009). The effect of enteric-coated, delayed-release peppermint oil on irritable bowel syndrome. *Digestive Diseases and Sciences, 54*(8), 1737-1743. https://doi.org/10.1007/s10620-009-0854-9

5. Cappello, G., Spezzaferro, M., Grossi, L., Manzoli, L., & Marzio, L. (2007). Peppermint oil (Mintoil) in the treatment of irritable bowel syndrome: A prospective double-blind placebo-controlled randomized trial. *Digestive and Liver Disease, 39*(12), 1061-1065. https://doi.org/10.1016/j.dld.2007.02.006

6. Di Ciaula, A., Portincasa, P., Maes, N., & Albert, A. (2018). Efficacy of bio-optimized extracts of turmeric and essential fennel oil on the quality of life in patients with irritable bowel syndrome. *Annals of Gastroenterology, 31*(3), 318-323. https://doi.org/10.20524/aog.2018.0304

7. Portincasa, P., Bonfrate, L., Scribano, M. L. L., Kohn, A., Caporaso, N., Festi, D., Campanale, M. C., Di Rienzo, T., Guarino, M., Taddia, M., Fogli, M. V., Grimaldi, M., & Gasbarrini, A. (2014). Curcumin and fennel essential oil improve symptoms and quality of life in patients with irritable bowel syndrome. *Journal of Gastrointestinal and Liver Diseases, 23*(4), 441-448. https://doi.org/10.15403/jgld.2014.1121.252.ccm

8. Zhang, M., Zhao, R., Wang, D., Wang, L., Zhang, Q., Wei, S., Lu, F., Peng, W., & Wu, C. (2019). Ginger (Zingiber officinale Rosc.) and its bioactive components are potential resources for health-beneficial agents. *Phytotherapy Research, 33*(3), 423-440. https://doi.org/10.1002/ptr.6858

9. van Tilburg, M. A. L., Palsson, O. S., Ringel, Y., & Whitehead, W. E. (2014). Is ginger effective for the treatment of irritable bowel syndrome? A double-blind randomized controlled pilot trial. *Complementary Therapies in Medicine, 22*(5), 714-720. https://doi.org/10.1016/j.ctim.2013.12.015