Premium Protocol:

Gastrointestinal Health – Chronic Digestive Discomfort (IBS)

Fullscript

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What are Premium Protocols?

Developed by Fullscript's Integrative Medical Advisory Team, Premium Protocols are resources for practitioners that expand on previous supplement protocols to include condition-oriented, evidence-based recommendations for non-supplement integrative medical therapies, including nutrition, lifestyle recommendations (e.g., mindfulness or stress management), and physical activity. Our team has curated the highest level of evidence available for each therapeutic category in order to inform practitioners about which recommendations have the highest likelihood of improving their patients' health.

How to use these protocols and choose an intervention

At Fullscript, we understand that each person requires individualized care and what works for one patient may not work for another. We have compiled our top recommendation for each treatment modality, identified as our Tier 1 recommendations. These decisions are often complex and involve using a combination of the Rating Scale of evidence below, the magnitude of effect in the available studies, and integrative medical practitioner expert consensus. If a practitioner strongly believes their patient would achieve more benefit from an alternative therapy to the Tier 1 recommendation, they are encouraged to view all other recommendations in the Tier 2+ section.

Practitioners are encouraged to select therapies from these protocols that are most complementary based on where the patient is at in their health journey. For example, a practitioner may recommend prioritizing nutrition recommendations over physical activity for a patient who is already exercising quite a bit. Patients may also benefit from a staged approach, where a practitioner recommends one or two supplement therapies combined with one or two non-supplement therapies, to reduce treatment complexity. Keep in mind that some therapies may take four to 12 weeks to experience intended effects.

Studies are categorized into evidence hierarchies in the references section according to our Rating Scale found in the following table.

Class	Qualifying studies	Minimum requirements
A	Systematic review or meta-analysis of human trials	
B	Human RDBPC	≥ 2 studies and/or 1 study with ≥ 50 subjects
C	Human RDBPC or RCT	1 study < 50 subjects
D	Human trials or in vivo animal trials	
E	In vitro studies	
F	Theoretical based on biochemistry/physiology/pharmacokinetics	

RDBPC = Randomized Double-Blind Placebo-Controlled
RCT= Randomized Controlled Trials

Introduction: chronic digestive discomfort

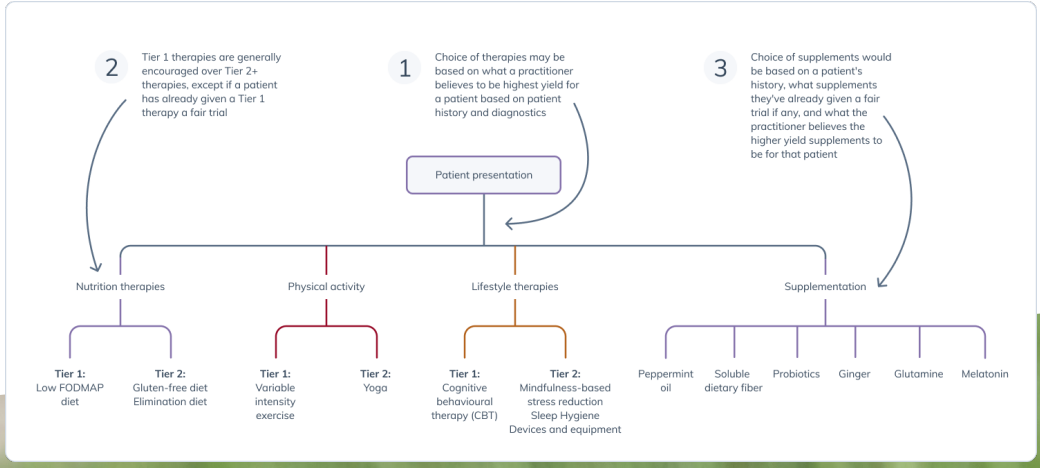
Irritable bowel syndrome (IBS) is most frequently characterized by abdominal pain or discomfort with altered bowel habits. These habits may be constipation (IBS-C), diarrhea (IBS-D), or a mixed presentation (IBS-M). (Ford 2008)(Longstreth 2006) Based on studies conducted in Australia and the United Kingdom, the prevalence of IBS is estimated to be between 5 to 20%, depending on the diagnostic criteria used. (Ford 2012)

Most commonly, IBS is treated with therapeutics targeting the presenting symptoms (i.e., with laxatives or antidiarrheals) but may also involve antispasmodics, antibiotics, and/or antidepressants. (Khoshoo 2006)(Lesbros-Pantoflickova 2004)(Pimentel 2011)(Ruepert 2011)

There are a number of different integrative therapies that may benefit chronic abdominal pain with diarrhea and/or constipation. Nutrition-based therapies that focus on substitution of various types of foods that trigger inflammatory and spasmodic contraction of the bowels may help. (Singh 2018) There also often exists a body of evidence showing that therapies targeting stress and sleep may be effective in reducing certain digestive symptoms. (Ballou 2020) (Black 2020) Increasing physical activity, including physical activity with a mindfulness aspect, may also provide benefits. (Shahabi 2016) Finally, in those with chronic digestive discomfort with constipation, devices aiding in squatting may be beneficial. (Sakakibara 2010)

In terms of effect sizes, some integrative medical therapies may have effect sizes comparable to conventional medical therapies. A 2011 Cochrane review commented on the relative effect sizes of various therapeutics (mostly pharmaceuticals) for IBS abdominal pain, showing that peppermint oil had a 92% increased odds of improving IBS symptom score versus placebo, compared to 86% for antispasmodics overall and 99% for antidepressants overall. (Ruepert 2011)

Treatment summary: IBS



(Low-FODMAP diet, Gluten-free diet, Elimination diet, Variable-intensity exercise, Yoga Mindfulness-based stress reduction, Sleep hygiene)

Nutrition therapies

Tier 1 recommendations

Low-FODMAP diet

A low-FODMAP diet is characterized by a reduced intake of certain shorter-chain carbohydrates known as fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAPs). These carbohydrates may act as fermentable substrates to certain gut flora and may increase delivery of water to the proximal colon, creating distention and various symptoms including bloating. (Barrett 2010)

There is some high-level evidence supporting the application of a low-FODMAP diet for IBS. A 2021 systematic review (SR) and meta-analysis (MA) found that the low-FODMAP diet decreased global IBS symptoms, including abdominal pain and bloating severity, and improved bowel habits. For reduction of global symptoms, a low-FODMAP diet was found to be 33% more effective than a person's habitual diet. (Black 2021)

Another similar study found a moderate reduction in symptoms (SMD=-0.53) and minor improvement in quality of life (SMD=0.24) across a diverse set of individuals with IBS. In particular, individuals with IBS-D following a low-FODMAP diet were found to have an improvement in stool consistency (mean difference = 5.6 less bowel movements per week) and quality (mean difference = 0.86 less on Bristol stool chart). (Hahn 2021)

Finally, another 2021 SR and MA found a moderate to large reduction in IBS symptoms (SMD=-0.66) and increased quality of life scores (van Lanen 2021). Taking into account the fact that high-level evidence repeatedly finds overall moderate magnitude of effect improvements in IBS, a low-FODMAP diet is a Tier 1 recommendation for chronic digestive discomfort.

A recurring duration in studies examining low-FODMAP diets is four or six weeks (van Lanen 2021). In terms of safety, little tends to be reported other than potential concerns on nutritional adequacy. (Black 2021)(Hahn 2021)(van Lanen 2021) Results vary greatly; many trials find higher intakes of vitamin A, beta-carotene, (Ostgaard 2012) B vitamins, (O'Keeffe 2017) (Staudacher 2019) and selenium. (Ostgaard 2012) However, some find lower intakes of riboflavin, (Eswaran 2019) calcium, (Ostgaard 2012) thiamin, and iron. (Eswaran 2019) Some trials find no overall difference in micronutrient intake, (Staudacher 2019) and some find lower micronutrient intake across all quintiles of adherence to a low-FODMAP diet.

(Pourmand 2018) Some trials report possible influences on the gut microbiome, showing possible decreases on *Bifidobacterium* quantity but no overall influence on microbiome diversity. (Staudacher 2019) (van Lanen 2021) Practitioners are urged to proceed with caution if recommending a low-FODMAP diet to a patient with micronutrient deficiencies or gut microbiome dysbiosis for longer than six weeks. Practitioners are encouraged to check in on symptoms throughout and following any dietary intervention to monitor outcomes.

Explore patient resources on the low-FODMAP diet:
Low-FODMAP diet handout
Low-FODMAP diet guide

Tier 2+

Gluten-free diet

The consumption of gluten, most commonly from wheat flour-containing products such as breads, pastas, and baked goods, is a frequent trigger for IBS symptoms in certain individuals. (Scarpato 2019)

Eight of 11 trials examined in a 2019 MA found a statistically significant reduction in IBS symptoms with the elimination of gluten. Typical duration of the gluten-free diet was four or six weeks. (Scarpato 2019) One trial failed to find an association between gluten and gastrointestinal (GI) symptoms when FODMAPs were simultaneously reduced. (Biesikierski 2013) Two further studies found that a large portion of the placebo group experienced an exacerbation of symptoms, showing no significant difference between gluten versus placebo. (Elli 2016) (Frankavilla 2018)

While there are many trials showing improvement of IBS symptomatology with gluten and/or wheat removal, the confounding factor of FODMAP removal with wheat removal may be contributing to improvement in symptoms in some individuals. As a result of this and the less consistent improvements versus a low-FODMAP diet, the gluten-free diet is a Tier 2 choice.

Explore patient resources on the gluten-free diet:
Gluten-free diet handout
Hidden sources of gluten handout
Gluten-free diet guide

Elimination diet

Many patients experience a variety of possible food intolerances, and two-thirds of patients with IBS have at least one food intolerance. (Singh 2018) Some of the most common foods that may trigger symptoms include those rich in carbohydrates and fat, hot spices, coffee, and alcohol. Dairy products may also present issues for some, and lactase supplementation may not be helpful. (Singh 2018)

While IgG food sensitivity blood testing is costly, harder to access, and controversial, substituting foods identified by this test generally improves IBS symptoms and quality of life. (Singh 2018) Some studies have noted superior improvement to general elimination diets, while others have found benefit only in individuals with IBS-C or IBS-D (as opposed to mixed). (Atkinson 2004) (Singh 2018)

The evidence appears to be superior for a low-FODMAP diet versus an elimination diet; however, if a patient is unresponsive to a low-FODMAP diet and/or they present with what may be many different food sensitivities, they may benefit from an elimination diet or IgG food sensitivity testing. Such diets are typically followed for four to 12 weeks to assess for efficacy. (Singh 2018)

Explore patient resources on the elimination diet:
Elimination diet: diet and symptom diary for reintroduction
Elimination diet guide
Elimination diet: phase 1 meal plan

Lifestyle therapies

Tier 1

Cognitive behavioral therapy

Cognitive behavioral therapy (CBT) is typically a practitioner-led experience that helps individuals reveal and change false and distressing beliefs. Sessions are typically an hour, occur weekly, and may last a few sessions or several months depending on the type and severity of concerns encountered. (CBT 2016)

A 2020 MA of 41 RCTs showed a 39% risk reduction for minimal contact CBT and 38% for face-to-face CBT for remaining symptomatic individuals with IBS. Gut-directed hypnotherapy also reduced risk by 33%. (Black 2020) Risk of bias was noted to be high, with funnel plot asymmetry making overestimation of effect sizes likely. Another large MA found that CBT significantly reduced IBS symptom severity as well as anxiety and depression. (Dai 2020) Bias was noted to be unclear and evidence according to the GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) framework was low. Due to the body of literature being larger and stronger (41 RCTs comprised this MA), this makes CBT a Tier 1 recommendation.

A 2022 SR and network MA showed that non-mental health specialists can effectively deliver CBT even to those with comorbid health problems. (Angelakis 2022) Another similar study showed that CBT based interventions for common mental health disorders were effective when delivered via the internet to older populations. (Dworschak 2022) However, if CBT is not within a practitioner's scope of practice or a practitioner doesn't feel they are competent enough in CBT, a referral to a licensed counselor, psychotherapist, or psychologist is recommended. Many online CBT resources are also available, including training and certifications from the Beck Institute. Digitally delivered CBT has been found to be at least as effective as in-person CBT. (Luo 2020) Furthermore, there are CBT-based apps that exist specifically for IBS, such as the Zemedy app.

Tier 2+

Mindfulness-based stress reduction

Mindfulness-based stress reduction (MBSR) therapy is a form of psychotherapeutic treatment that helps patients build non-judgmental awareness of the present moment. It involves the monitoring of cognition, emotions, perception, and sensations as well as the development of non-reactivity to difficult or negative aspects of these experiences. (Aucoin 2014)

Mindfulness-based therapies showed a 41% risk reduction in IBS symptom severity and a 44% improvement in quality of life in a 2014 MA. Overall, six of seven trials achieved or maintained benefit at the end of the intervention (often eight weeks in duration) or follow-up time points, with an unclear or high risk of bias. (Aucoin 2014)

A common feature of MBSR therapy is a body-scan exercise, which can be performed daily for five minutes in order to feasibly incorporate mindfulness into an individual's lifestyle.

Sleep

According to a 2018 meta analysis, those with IBS were found to have an increased risk (2.6x) of having a sleep disorder. (Wang 2018) Sleep disturbances predicted higher levels of next-day IBS symptoms such as abdominal pain and altered bowel patterns in women in early adulthood. (Buchanan 2014) (Patel 2016)

Brief behavioral therapy for insomnia (BBT-I) was developed to condense, improve accessibility of, and mimic CBT-I. It consists of four weeks of sessions (alternating between in-person and phone sessions) of sleep hygiene education and sleep journaling. The sleep hygiene recommendations included four rules: matching time in bed with time spent sleeping, waking up everyday at the same time, not going to bed unless sleepy, and not staying in bed if not sleepy (Troxel 2012)

A 2020 RCT using BBT-I in patients with IBS found a significant improvement in IBS scores in 40% of the ten participants in the BBT-I group versus 17% in the control group (who completed only the journaling on their own with no education) of 12 participants. Unfortunately, the difference between the two groups was not statistically significant. (Ballou 2020)

Since electronically delivered CBT may be at least as effective as in-person delivery, (Luo 2020) resources like the CBT-iCoach app (U.S. Department of Veterans Affairs) may provide value for practitioners and patients. Patients may also benefit from viewing these lifestyle tips for improving sleep hygiene.

Devices and equipment

Squatting, compared to normal sitting or sitting with knees elevated, increased the rectoanal angle, reducing straining, easing bowel movements, and possibly helping defecation in IBS-C (Sakakibara 2010). Practitioners should consider a squatting device (e.g., Squatty Potty) to help promote a squatting body posture for defecation.

Physical activity

Tier 1

Variable-intensity exercise

Exercise of various intensities may improve IBS symptomatology. A 2018 RCT examined 12 weeks of 30 minutes of walking or jogging (45 to 55% VO2 max) every other day, followed by 12 weeks of 45 minutes of running (56 to 59% VO2 max) for four to six days per week. The study noted significant improvements in IBS compared to no exercise, specifically a 38.5 point decrease (12% improvement) in IBS-SSS scores versus baseline in the first 12 weeks, followed by a further 55.9 point decrease (19% further improvement) at week 24. (Maleki 2018)

Furthermore, a 2011 RCT examined the effects of 20 to 60 minutes of moderate- to vigorous-intensity exercise three to five days per week, finding that this decreased IBS-Severity Scoring System (IBS-SSS) scores by 51 points (versus 5 points in the control group). (Johannesson 2011)

While there is little comparative research to other physical activity modalities, one trial compared walking to yoga, finding both to be effective in the short-term. However, yoga was found to be more difficult to maintain at six months for these predominantly female (89%) participants with a mean age of 36. This likely resulted in a rise in GI symptoms from post-treatment to follow-up. (Shahabi 2016) Therefore, due to higher ease of maintenance on average, variable-intensity exercise is a Tier 1 recommendation.

A reasonable, safe starting point for physical activity is 30 minutes of walking, every other day. Depending on their fitness level and tolerance for running, they may alternatively jog or run for 30 to 45 minutes, three to six days per week. (Maleki 2018) Both of these regimens are similar to the U.S. Department of Health recommendations of 150 minutes of physical activity per week. Vigorous exercise will also help meet these guidelines, except that every minute of vigorous exercise 'counts' for two minutes of low-intensity exercise. Exercise plans should be followed for a minimum of 12 weeks to assess effects. (Maleki 2018)

Tier 2+

Yoga

Yoga is a form of exercise and mindfulness that incorporates moving through different postures and breathwork. (Schumann 2016) A 2016 systematic review of six RCTs including 273 patients examined yoga as a potential treatment for IBS. Across the different trials examined, there was a variety of types of yoga performed for different durations and frequencies. On average, trials examined Iyengar yoga, a more accessible style of yoga, twice weekly for one hour, for eight weeks. This review concluded that yoga tended to be superior to conventional treatments for IBS for decreasing bowel symptoms, IBS severity, and anxiety. Additionally, there were improvements in quality of life, global improvement, and physical functioning compared to no treatment. (Schumann 2016)

A 2020 narrative review found yoga to be superior to pharmacologic treatment and equivalent to dietary interventions and moderate-intensity walking in terms of effect size. Improvements were noted in IBS symptom severity, gastric motility, depression, anxiety, and quality of life. Furthermore, anxiety about IBS symptoms, as they can be very debilitating and affect one's quality of life and ability to leave their house, was also improved. (D'Silva 2020)

Explore patient resources related to yoga:
Yoga practices: patient handout
Yoga poses for digestion: patient handout
Hatha yoga seated practice: video

Supplement therapies

Depending on the symptoms presented, there are a variety of ways to help ameliorate symptoms. For example, having integral intestinal permeability helps the body absorb nutrients and dispose of waste properly. The amino acid glutamine helps to improve this function and may contribute to better digestion. (Sevastiadou 2011)(Zhou 2019). Antispasmodics such as peppermint oil can also help with pain associated with digestive dysfunction. (Merat 2010) Both probiotics and fiber contribute to improving stool consistency through the mechanism of fostering a healthy microbiota (Liang 2019)(Yasukawa 2019) which can lend to easier passing as well as serve as an indicator for digestive health.

Based on current research findings, the ingredients in the protocol below have demonstrated efficacy in improving a variety of factors associated with GI upset or digestive dysfunction.

Peppermint oil

Dosing: 180 mg, three times per day, minimum four weeks; (Cash 2016) other dosages may vary

Supporting evidence:

- 42.4% of patients with IBS were pain-free after eight weeks of supplementation with delayed-release peppermint oil compared to 22.2% in placebo. The proportion of patients reporting persistent pain decreased from 42 to 15% in the peppermint oil group, whereas it increased from 33 to 52% in the placebo group. (Merat 2010)
- Peppermint oil supplementation ameliorated symptoms of IBS at 24 hours shown by a decrease in Total IBS Symptom Score (TISS) of 19.6% compared to 10.3% in the placebo group. After four weeks, the decrease in TISS scores were 40% in the treatment group compared to 24.3% in the placebo group. (Cash 2016)
- 75% of patients treated with enteric-coated peppermint oil capsules for four weeks experienced at least a 50% reduction in TISS scores compared to 38% in the placebo group. (Cappello 2007)

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Soluble dietary fiber

Dosing: Ranges widely, from 4.1 to 40 g/day for 3-16 weeks as per this systematic review (Nagarajan 2015)

Supporting evidence:

- A systematic review of 22 studies with dose ranging 4.1 to 40 g/day for 3-16 weeks determined that soluble (but not insoluble) fiber supplementation resulted in a significant improvement in global assessment of symptoms (RR 1.49) as well as abdominal pain scores. (Nagarajan 2015)
- In patients with tendency toward diarrhea (IBS-D), 5 g/day of soluble fiber of partially hydrolyzed guar gum improved and normalized Bristol stool scale ratings after three months compared to placebo. (Yasukawa 2019)
- After 10 g/day for 12 weeks, symptom severity improved by 90 points in the psyllium group (RR 1.60) compared to 29 points in placebo and 58 points in bran groups in patients with IBS aged 18 to 65. It is notable that the group receiving bran had a high dropout rate due to symptoms of IBS worsening. (Bijkerk 2019)
- A systematic review of 14 studies involving 906 patients found that soluble fiber (but not insoluble fiber) significantly improved IBS symptoms (RR 0.86). (Moayyedi 2014)

US catalog link CA catalog link

Probiotics

Dosing: 50 billion CFU, twice per day, minimum 12 weeks (Preston 2018) or 25-50 billion CFU, 1-3 times per day, as per this systematic review (Didari 2015)

Supporting evidence:

- A systematic review of 15 studies with 1,793 patients found that probiotics reduced pain and symptom severity scores in patients with IBS. The relative risk (RR) of general symptom improvement for seven of the key trials was 2.14, in favor of probiotics over placebo. (Didari 2015)
- Another systematic review of 43 RCTs found that probiotics reduced the risk of persistent symptoms compared to placebo (RR 0.79). Benefits were seen among global IBS, abdominal pain, bloating, and flatulence scores. (Ford 2014)

(Continued on next page)

Probiotics (cont.)

Supporting evidence:

- A recent systematic review showed that seven of 11 of the included studies reported improved IBS symptoms from probiotic supplementation compared to placebo. Multi-strain probiotics with an intervention of eight weeks or more were more likely to have a benefit. (Dale 2019)
- Female patients with IBS-D (diarrhea-predominant) and IBS-C (constipation-predominant) experienced improved quality of life and stool frequency and consistency when supplemented with two capsules per day of probiotics containing 50×10^9 CFU of live organisms of *Lactobacillus acidophilus* CL1285, *Lactobacillus casei* LBC80R, and *Lactobacillus rhamnosus* CLR2 for 12 weeks. (Preston 2018)

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Ginger

Dosing: 1,200 mg one hour before eating, as needed (Hu 2011)(Wu 2008)

Supporting evidence:

- Patients with mild to moderate ulcerative colitis experienced a decreased severity of disease activity as well as an improvement in quality of life scores after 12 weeks of supplementation at 2,000 mg/day compared to placebo. Malondialdehyde levels (but not total antioxidant capacity) also decreased at both six and 12 weeks. (Nikkhah-Bodaghi 2019)
- Digestion improved in two RCTs as shown by a faster gastric half-emptying time and increased antral contractions in treatment group (1,200 mg/day ginger capsule) compared to placebo. (Hu 2011)(Wu 2008)
- Patients with a history of motion sickness experienced a delayed onset of nausea after vection cessation as well as a decrease in tachygastria activity and vasopressin release. (Lien 2003)

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Glutamine

Dosing: 5 g, three times daily, for eight weeks; (Zhou 2019) dosages may vary

Supporting evidence:

- Intestinal hyperpermeability improved in burn victims given 0.5 g/kg/day for 14 days compared to placebo. (Peng 2004)
- Acute glutamine administration at 0.25-0.9 g/kg fat-free mass two hours prior to running in a heat chamber has been shown to reduce GI permeability in a dose-dependent manner. (Pugh 2017)
- Adults with IBS-D symptoms following a GI infection were given 5 g t.i.d. glutamine or placebo for eight weeks; 79.6% of patients in the glutamine group experienced at least a 50 point reduction in IBS-SSS scores compared to 5.8% in the placebo group. (Zhou 2019)

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Melatonin

Dosing: 3-6 mg before sleep for 40 days to allow for optimal regression of symptoms (Kandil 2010; Pereira 2006)

Supporting evidence:

- 3 mg of melatonin before sleep was found to be associated with a significant reduction in signs and symptoms of GERD, such as increased lower esophageal sphincter tone and reduced epigastric pain, both without and with omeprazole (the latter being an additive effect), noting a greater effect of omeprazole versus melatonin when given individually. (Kandil 2010)
- After dinner supplementation of 6 mg of melatonin, along with vitamins B6, B12, folic acid, methionine, tryptophan, and betaine, was associated with complete regression of symptoms in 100% of 176 individuals versus 66% of the omeprazole group after 40 days. (Pereira 2006)
- Melatonin has been found to be secreted by GI mucosal cells at concentrations 100 to 400 times blood plasma levels, where it may strengthen the esophageal and gastric mucosal barriers to irritants from endogenous or exogenous production. (Majka 2018) Additionally, melatonin has been found to be associated with quicker healing of stomach ulcers. (Celinski 2011)

For more information on melatonin, including formulations, dosing and administration, and adverse effects, view melatonin in our Ingredient library.

US catalog link CA catalog link

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