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Turmeric and Curcumin Supplements and Spices Review

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Summary

- **What are turmeric and curcumin?** Turmeric is a spice used for its flavor and orange-yellow color. Curcumin is one of several curcuminoid compounds found in turmeric that give turmeric its color and antioxidant and anti-inflammatory properties, making turmeric root powders and extracts useful as dietary supplements (see [What It Is](#)).
- **What did CL's tests of turmeric find?** As shown in the [Results Table](#) below, one supplement was discovered to be **contaminated with lead**. Amounts of curcuminoids found ranged from just 14.6 mg to more than 1,000 mg per serving.
- **Best turmeric/curcumin supplement?**
 - Among supplements that passed testing and were Approved for quality, we identified an overall [Top Pick Turmeric Supplement](#) that provides clinically significant amounts of curcuminoids at low cost and includes a bioavailability enhancer to boost the amount of curcuminoids in your bloodstream.
 - We also identified [Top Pick for Turmeric & Curcumin Without Bioavailability Enhancement](#) that is also high in curcuminoids and relatively low in cost.
 - If you can't take a turmeric supplement along with a meal containing fats or oils, we also identified a [Top Pick for Turmeric & Curcumin If Taken Without Food](#) — although it is more expensive.
 - A [Top Pick for Turmeric & Curcumin for Dogs](#) was also selected.
- **Best ground turmeric spice?** We identified a [Top Pick Ground Turmeric Spice](#) that provides a significant amount of curcuminoids (33 mg per ½ teaspoon) with less lead than other ground turmeric spices and at lower cost. To get the most from turmeric spice, use it in a meal that contains fats or oils, as well as some [black pepper](#).
- **What are the health benefits of turmeric?** Small clinical studies suggest that curcumin from turmeric is helpful for indigestion, ulcerative colitis, rheumatoid arthritis and osteoarthritis, seasonal allergies and depression. Turmeric/curcumin may improve cognitive function in healthy older adults, but little benefit has been found in people with Alzheimer's disease. Other compounds may also be active (see [What It Does](#)).



- **How much turmeric should I take?** The typical daily dose ranges from 500 mg to 2,000 mg of curcuminoids (most of which is curcumin) from turmeric extracts (see [Dosage](#)), which can often be as much as 95% curcuminoids of which around 80% is curcumin. Be aware that turmeric powder in some supplements provides no more curcumin than turmeric spice, which is only about 3% curcuminoids of which around 50% is curcumin, i.e., half a level teaspoon of turmeric powder (about 1 gram) provides about 35 mg of curcuminoids.
- **How do forms of turmeric differ?** Turmeric and curcumin are not well absorbed on their own and it's generally [best to take turmeric/curcumin with food](#) containing some fat in order to increase absorption. If you can't always take turmeric or curcumin with food, see [Absorption and Bioavailability](#) to learn about bioavailability enhancement with ingredients such as BCM-95, C3 (which includes the black pepper extract piperine, known as Bioperine), CurcuWin, Longvida, Meriva, NovaSol, and Theracurmin.
- **Turmeric/curcumin safety and side effects:** Turmeric/curcumin supplements are generally safe, but gastrointestinal side effects may occur with higher doses and they can cause problems for people with gallbladder disease, kidney stones, or those taking blood-thinning or blood-sugar-lowering medications. Rarely, liver injury has been reported. One of the bioavailability enhancers commonly added can potentially affect a number of drugs (see [Concerns and Cautions](#)).

Products tested in 2023 and 2025

What It Is:

Turmeric is a spice used commonly as a food coloring, flavoring agent, and is a key ingredient in curry powders and mustards. Turmeric is used in Ayurveda (traditional East Indian medicine) for abdominal ailments and arthritis. The dried, powdered roots (or rhizomes) of the plant, *Curcuma longa*, are used medicinally. Most research has focused on compounds in turmeric called curcuminoids and, more specifically, on the compound curcumin, which gives turmeric its orange-yellow color and is the predominant curcuminoid in turmeric. The other two curcuminoids in turmeric are demethoxycurcumin and bisdemethoxycurcumin.

What It Does:

Many uses of turmeric relate to the antioxidant or anti-inflammatory activities of curcumin. The anti-inflammatory action might involve blocking cyclooxygenase-2 (COX-2), the target of non-steroidal anti-inflammatory drugs (NSAIDs) like Celebrex (celecoxib) and Motrin (ibuprofen). In *in-vitro* studies, curcumin has also been shown to inhibit certain pathogenic bacteria and viruses, as discussed below.

A critical analysis of research on curcumin extracts (as opposed to whole turmeric powder or extracts with a broader range of turmeric compounds) by experts in medicinal chemistry suggested that: 1) much of the activity of curcumin in laboratory experiments may be "false" and only due to its interference with tests; 2) regular curcumin lacks features common to useful medicines since it is poorly absorbed and unstable; and 3) several well-controlled clinical studies have failed to show clinical benefits with curcumin ([Nelson, J Med Chem 2017](#)). The analysis makes valid points – studies to-date that *have* shown benefit have been small – but it avoids discussion of the potential for bioavailability-enhanced curcumin formulations that overcome absorption issues and are now the most commonly used types of curcumin supplements.

Nevertheless, turmeric and curcumin have been studied, with varying success, for treating a wide range of conditions, as discussed below.

Gastrointestinal Uses

Turmeric and curcumin have been evaluated for conditions ranging from simple indigestion to several forms of inflammatory bowel diseases.

Several small, short-term studies in Thailand suggest that taking curcumin after meals or before bedtime may, over time, slightly to modestly reduce symptoms of **indigestion** (functional dyspepsia) such as stomach pain, bloating and gas. For example, a study in Thailand among 116 participants who took either 500 mg of turmeric or placebo four times daily for seven days found that 87% of the turmeric group reported improvement compared to 53% in the placebo group ([Thamlikitkul, J Med Assoc Thai 1981](#)). A second study in Thailand, among 132 men and women with moderate indigestion who took either 500 mg of curcumin four times daily (after meals and at bedtime), the proton-pump inhibitor omeprazole (e.g. Prilosec) 20 mg once daily before breakfast, or a placebo (after meals), found that, after one month, those who took curcumin or omeprazole had similar, modest reductions in pain (average decreases of 17 points and 15 points, respectively, on a 47-point scale), and these decreases were statistically significant compared to placebo (average decrease 10 points), although not much greater. Those who took curcumin or omeprazole also had decreases in other symptoms, such as gas, bloating and nausea (average decrease of 8 points and 7 points, respectively, on a scale of 0 to 35), but these decreases were only statistically significant compared to placebo (average decrease 6 points) for those who took curcumin ([Yongwatana, J Gastroenterol Hepatol 2021](#)).

Another 4-week study in Thailand (among 206 people with functional dyspepsia) also found curcumin comparable to omeprazole for reducing symptoms of indigestion, although the benefits were small and there was no placebo group, which is needed to prove any benefit. Pain intensity decreased with curcumin (500 mg four times daily) and omeprazole (20 mg once daily) by 5.46 and 6.22 points, respectively, on a scale of 2 to 47, and non-pain symptoms (belching, heartburn, bloating, passing gas, sour taste, nausea and bad breath) decreased by 2.32 and 2.31 points on a scale of 7 to 35. There were *no additional improvements* when curcumin was taken *with* omeprazole ([Kongkam, BMJ Evid Based Med 2023](#)).

A study among 79 men and women (average age 42) in Australia with mild to moderate digestive symptoms such as reflux, indigestion, diarrhea, and constipation, found that taking 500 mg of a standardized turmeric extract formulated with a small amount of turmeric essential oils to improve bioavailability (*Curcugen*, by DolCas Biotech, LLC, which funded the study), providing 250 mg of curcuminoids, once daily with 8 oz. of water immediately before sleep for two months only slightly reduced the average overall symptom scores compared to placebo (an average reduction of 0.81 points vs a reduction of 0.47 points, respectively, on a 7-point scale), but there was no improvement in any specific symptoms (e.g., pain, reflux, diarrhea, indigestion, or constipation) compared to placebo ([Lopresti, BMC Complement Med Ther 2021](#)).

Inflammatory bowel disease (ulcerative colitis and Crohn's disease):

Curcumin may be helpful for people with **ulcerative colitis** when taken in addition to standard medication (e.g., mesalamine, also known as 5-ASA), although results appear to vary depending on the curcumin formulation and dosage. In one study, 50 people with mild to moderate ulcerative colitis not responsive to mesalamine were given 1.5 grams of curcumin twice a day (3 grams per day of curcumin) or placebo for one month with continued mesalamine treatment. At week four, none of the patients who received placebo achieved remission, while a startling 53.8% of those receiving curcumin did. The curcumin used was Cur-Cure™ (Bara Herbs, Israel), a 95% pure curcumin preparation ([Lang, Clin Gastroenterol Hepatol 2015](#)). A study among 56 men and women in Iran with mild to moderate ulcerative colitis found that 80 mg of an enhanced-bioavailability "nanoparticle" formulation of curcumin (similar to Theracurmin) taken three times daily (240 mg per day) in addition to mesalamine for one month modestly decreased urgency of bowel movements and improved self-reported well-being, but did not decrease blood in the stool or colitis-related skin ulcers compared to mesalamine alone ([Masoodi, J Cell Biochem 2018](#)).

One gram of curcumin taken twice daily in addition to mesalamine or sulfasalazine for six months helped *maintain remission* from ulcerative colitis compared to standard medications plus placebo ([Hanai, Clin Gastroenterol Hepatol 2006](#)), but a lower dose (450 mg of curcumin daily) did not improve remission rates or improve mucosal healing compared to placebo in men and women with active ulcerative colitis taking mesalamine ([Kedia, World J Gastrointest Pharmacol Ther 2017](#)).

A very small pilot study suggests a benefit with curcumin in treating ulcerative proctitis and Crohn's disease ([Holt, Digestive Diseases and Sciences 2005](#)). However, a double-blind, randomized trial found that curcumin (3,000 mg of a 95% pure extract providing 2,850 mg of curcuminoids) taken daily for six months was no more effective than placebo in preventing recurrence of **Crohn's disease** in adult

patients who had recently undergone a bowel resection and were taking the immunosuppressant medication (azathioprine). In fact, a significantly higher proportion (55%) of those receiving curcumin had a severe recurrence compared to those receiving the placebo (26%) ([Bommelaer, Clinical Gastroenterology and Hepatology 2019](#)).

Although obesity is common among people with inflammatory bowel disease (IBD), and has been linked with an increased risk of Crohn's disease (possibly due to pro-inflammatory compounds secreted by body fat) ([Singh, Nat Rev Gastroenterol Hepatol 2016](#)), curcumin supplementation without changes to diet and activity levels has not been found to reduce weight, although it may slightly increase lean muscle mass in some people with IBD (see [Weight loss](#) for details).

Other GI conditions:

The results of human studies using turmeric for treating gastric or duodenal **ulcers** conflict. At least two studies found no benefit while a third found that turmeric improved symptoms. Additionally, while some animal research suggests that turmeric might help prevent ulcers, other animal research suggests that turmeric might increase the risk of ulcers.

A preliminary study in five people with **familial adenomatous polyposis** (a genetic disorder causing hundreds of intestinal polyps and eventually colorectal cancer) suggested that curcumin might cause regression of **polyps** in such people, and such is the case with other non-steroidal anti-inflammatory drugs. However, a 12-month clinical study in which patients were given 1,500 mg of pure curcumin twice daily or a placebo found no significant difference in the mean number of polyps or polyp size between the two groups. Possibly explaining the different outcomes of the studies, the researchers noted the earlier, positive, study used a lower total dose of curcumin (480 mg given three times daily) but it included black pepper extract to increase bioavailability as well as quercetin (20 mg per dose) ([Cruz-Correa, Gastroenterology 2018](#)).

Arthritis

There is clinical evidence that curcumin (usually about 1,000 mg per day, but as low as 500 mg) can treat *symptoms* (mainly pain and inflammation) of osteoarthritis and rheumatoid arthritis, although larger studies are needed to confirm these findings before a definitive recommendation can be made ([Daily, J Med Food 2016](#)). Details regarding the use of curcumin in each type of arthritis are below.

Rheumatoid arthritis:

Curcumin may help treat symptoms of rheumatoid arthritis – although it is not superior to non-steroidal anti-inflammatory drugs, and it does not appear to help maintain or prolong remission.

Two small studies have shown that curcumin may reduce symptoms of **rheumatoid arthritis** including joint swelling and stiffness and walking time. In one study, 1,200 mg of curcumin reduced symptoms, but not as well as the non-steroidal anti-inflammatory drug (NSAID), phenylbutazone ([Deodhar, Indian J Med Res, 1980](#)). In another study, 500 mg twice daily of a bioavailability-enhanced curcumin product (BCM-95, Biocurcumin) was comparable to a low dose (50 mg) of diclofenac (an NSAID) twice daily, after 8 weeks. Symptoms were reduced by about 40% from the beginning to the end of the study. Combining the curcumin and diclofenac was no more effective than either one alone ([Chandran, Phytother Res 2012](#)). A weakness of this study is that there was no placebo control group. (Note: The curcumin used in this study, BCM-95 is listed as an ingredient in *Terry Naturally CuraMed* tested in this Review.)

A small study in Iran among 44 women (average age 51) with moderately active rheumatoid arthritis (all of whom were taking prednisolone, 77% of whom were taking methotrexate, and 59% to 77% were taking hydroxychloroquine) showed that taking 500 mg of turmeric extract standardized to 95% (475 mg) of curcumin daily for 8 weeks reduced the number of tender or swollen joints from about 5 to only 1, which was statistically significant compared to the placebo group, which had no meaningful reductions. Joint pain was also significantly reduced with curcumin by 45 points (on a scale of 0 to 100) and disease activity was reduced by 1.69 points (on a scale of 0 to 10) compared to only 3.63-point and 0.05-point reductions in the placebo group ([Pourhabibi-Zarandi, Phytother Res 2024](#)).

A small, 90-day study in India found a highly bioavailable formulation of curcumin to greatly reduce pain and inflammation in people with rheumatoid arthritis. Twice-a-day after meals, patients took a placebo or 250 mg or 500 mg of the curcumin formula (Acumin also called Cureit, from Aurea Biolabs, India, which is 50% curcuminoids and, apparently, 10 times more bioavailable than regular curcumin)

([Amalraj, J Med Food 2017](#)). Although improvements were noted in biochemical markers of inflammation relative to placebo, it was not mentioned whether the improvements in symptoms were statistically significant relative to placebo: Due to small sample sizes in the study, they may not have been. This, and the fact that most of the study authors were employed by the product manufacturer, raise doubts about the importance of the findings. (This ingredient does not appear to be in any of the products tested in this review).

Curcumin supplementation did *not* help to maintain or prolong flare-free remission of rheumatoid arthritis in a study among 185 men and women (average age 52) in India who tapered off their regular medication. In the study, participants who had been in remission for more than six months (average one year in remission) with low disease activity while taking disease modifying antirheumatic drugs (methotrexate, hydroxychloroquine, sulfasalazine, or sefunomide) took either 1,000 mg of curcumin plus 5 mg of piperine twice daily, or placebo, for one year, while tapering down medication (approximately 25% decrease in dosage monthly). At the end of one year, a similar percentage of participants in the placebo group remained in remission compared to the curcumin group (60% vs 64%), and among those who experienced a flare during the study, the median number of days until flare was also similar ([Bhat, Rheumatol Int 2023](#)).

Osteoarthritis:

*Several short-term (6 to 12 week) studies focusing mainly on **osteoarthritis of the knee** have shown generally modest reductions in pain, but less improvement in function, with different turmeric formulations.* To reduce the risk of gastrointestinal side effects, it may be best to start with a low dose (which, at least in one study, was as effective as a higher dose). Curcumin supplementation does not appear to reduce pain during rehabilitation from *knee surgery*, although it may have a slight protective effect on knee cartilage after surgery.

A small placebo-controlled study of people with mild to moderate osteoarthritis of the knee found treatment with curcuminoids to be helpful. Six weeks of daily treatment with 1,500 mg of a curcuminoid complex resulted in significantly greater reductions in the severity of osteoarthritis symptoms than with placebo, with a particular reduction in pain and an improvement in physical function. Reports of stiffness were reduced in both the treatment and placebo groups, although not significantly more so in the treatment group ([Panahi, Phytother Res 2014](#)). Those receiving curcumin were able to reduce their use of anti-inflammatory drugs by 84% during the study – significantly more than the 19% reduction among those in the placebo group. The curcumin used in the study was taken three times each day as a capsule containing 500 mg of curcuminoids as C3 complex® including 5 mg of Bioperine®, a bioavailability enhancer.

The BCM-95 version of curcumin (taken as 500 mg capsules of *CuraMed*, each with 333 mg curcuminoids) was also found to modestly reduce pain-related symptoms of knee osteoarthritis as compared to placebo (which also showed improvement) in a 12-week study in Armenia, although it was somewhat more effective in improving physical performance when taken combined with a [Boswellia](#) extract (as *Curamin* – 350 mg curcuminoids and 140 mg boswellic acid, not tested in this Review, but found in *Terry Naturally Curamin*). The capsules were taken three times a day ([Haroyan, BMC Compl Alt Med 2018](#)).

A study in Belgium among 101 men and women with moderate knee osteoarthritis who took either 187 mg or 280 mg daily of turmeric root extract (90% curcumin formulated with polysorbate 80 to enhance absorption), or placebo, daily for three months all had modest improvements in self-reported measures of pain and mobility, but improvements were greater in those who took the extract (*Flexofytol*, from Tilman, which funded the study, but is not available in the U.S.). Pain decreased by 8 points (on a scale from 1 to 100) in those who took placebo, compared to decreases of 29.5 and 36.5 points, respectively, in those who took the low and higher doses of turmeric extract. Statistically, there was no difference in efficacy between the low and higher doses, although those who took the higher dose reported more adverse effects, such as abdominal discomfort and diarrhea, than those who took the lower dose or placebo. The extract was divided into two doses with meals ([Henrotin, Arthritis Res Ther 2019](#)).

A study in Australia among 98 men and women (average age 59) with mild to moderate knee osteoarthritis who were *not* already regularly taking anti-inflammatory medications or other supplements for their condition showed that taking 500 mg of standardized curcumin extract providing 250 mg of curcuminoids ([Curcugen](#), from DolCas Biotech, LLC – which funded the study) twice daily for eight weeks modestly reduced self-reported knee pain compared to placebo. Thirty-seven percent of participants who took curcumin

had a *clinically meaningful* reduction in knee pain, versus just 9% in the placebo group, with similar reductions in pain medication use (which was permitted during the study). However, supplementation did *not* significantly improve knee stiffness, function in daily living or sports and recreational activities, or quality of life impacted by knee pain compared to placebo ([Lopresti, Nutrients 2022](#)).

A study in India among 134 men and women (average age 52) with mild knee osteoarthritis and not taking pain medication who took either 250 mg (50 mg total curcuminoids) or 500 mg (100 mg total curcuminoids) of a bioavailability enhanced curcumin extract standardized to 20% curcuminoids (*CurcuWin Ultra+* from OmniActive Health Technologies, which funded the study) once daily for 12 weeks found that both groups had statistically significant reductions in knee pain and improvements in knee function compared to placebo, and those who took the higher daily dose of extract had significantly greater improvements compared to those who took the lower dose. After three months, self-reported knee pain decreased by about 20% among those who took 250 mg of extract and 35% among those who took 500 of extract compared to baseline, while there was no significant decrease in pain among those who took the placebo. Supplementation also modestly improved self-reported knee stiffness, and certain measures of knee function compared to placebo, with greater benefit shown among those who took the higher daily dose of extract. For example, the distance participants were able to walk during a six-mile walking treadmill test increased, respectively, by 32 and 60 yards among those who took the 250 mg and 500 mg daily dose of extract, while there was no improvement in walking distance among those who took the placebo ([Jagtap, J Orthop Res Ther 2023](#)).

There is only slight additional benefit from curcumin in people already taking an anti-inflammatory drug for osteoarthritis. A study evaluated the effect of daily curcumin (500 mg of a 95% curcuminoid extract) or a placebo (talc) in patients also given the anti-inflammatory drug diclofenac (50 mg/day) and omeprazole (20 mg/day, given to reduce gastric side effects of diclofenac). Not surprisingly, at two months both groups reported major improvements in joint pain, stiffness and function, but the curcumin group showed only slightly better improvement in pain and function, e.g., the pain score fell from 15 to 9.5 in the curcumin group and from 15 to 10.2 in the placebo group. The curcumin group had greater decreases in markers of oxidative stress, but not in levels of IL-1 beta, a marker of inflammation. Neither group showed knee joint improvements on X-ray. ([Srivastava, Inflammopharmacol 2016](#)).

Interestingly, taking curcumin alone or in combination with fish oil *did not* reduce joint pain in a placebo-controlled study of sedentary, obese men and women with mild, chronic osteoarthritis pain in the knees, lower back or shoulders ([Kuszewski, Rheumatol Adv Pract 2020](#)). [Note: The [same study](#) found no benefit with the addition of curcumin for increasing blood flow to the brain.]

Although most arthritis studies have focused on curcumin, one study suggested that other constituents in turmeric may have a role. This study used a turmeric extract (NR-INF-02 *Turmacin*®, Natural Remedies, India, 500 mg twice daily) that contained turmeric polysaccharides but no curcumin. The extract was found to perform better than placebo and better than chondroitin sulfate among people with knee osteoarthritis ([Madhu, Inflammopharm 2013](#)). *Turmacin* is included as a branded ingredient in combination products such as *TurmaBoost* by Wild Nature and *TurmaFLEX* by Stop Aging Now. *Turmacin* has also been evaluated in people with knee pain after exercise (see [below](#)).

Another study that evaluated turmeric polysaccharides *with* curcuminoids found modest improvement in pain but no reduction in swelling. The study involved 69 people (average age 62) with symptomatic knee osteoarthritis and confirmed effusion/synovitis (i.e., swelling/fluid collection in the joint) who took either 1,000 mg of turmeric extract (providing 800 mg of polysaccharides and 200 mg of curcuminoids) or placebo daily. After 12 weeks, those taking turmeric extract reported slightly less knee pain, but there was no significant reduction in swelling/fluid in the joint based on MRI images compared to the placebo group. The study was partially funded by the company that manufactured the extract (*Turmacin Plus*, Natural Remedies). Some, although not all, people in this study also used pain relievers, including anti-inflammatory drugs, or supplements for arthritis, and this may have impacted the results ([Wang, Ann Intern Med 2020](#)).

A study in Japan found that curcumin after **knee surgery** *did not* reduce self-reported pain compared to placebo. In the study, 43 men and women (average age 60) who had recently undergone a surgical grafting procedure to repair damaged knee bone and/or cartilage due to osteoarthritis, osteonecrosis (breakdown of bone due to lack of blood flow), or injury were given, for one year, three capsules of a water-dispersible curcumin extract (*Theracurmin*, by Theravalues Corporation – which funded the study) twice daily, providing a total of

180 mg of curcumin per day. While there was no reduction in pain, curcumin supplementation modestly reduced cartilage stiffness and roughness (based on images and measurements taken during a follow-up arthroscopic procedure) one year after surgery compared to placebo. The researchers speculated, based on animal studies, that this may be due to curcumin's ability to suppress inflammation in cartilage cells, but more research is needed to confirm this ([Nakagawa, Arthroscopy 2022](#)).

Muscle Soreness and Recovery After Exercise

Several studies have evaluated formulations of curcumin on muscle function, recovery, and soreness after exercise. *Although some studies report a benefit, others have not and the usefulness of curcumin in muscle recovery and soreness remains questionable. At best, if taken for a few days before intense exercise, curcumin may slightly reduce resulting inflammation and, if taken after exercise, it may reduce muscle damage and soreness. Taking a turmeric supplement containing turmeric polysaccharides without curcumin does not appear to significantly reduce knee pain following exercise.*

A small, placebo-controlled study in young healthy men found that 90 mg of a bioavailability-enhanced curcumin formula ([Theracurmin](#), from Theravalues Corp., which funded the study) taken with breakfast and dinner for seven days *before* a single intense session of eccentric resistance arm exercise slightly reduced one blood marker of inflammation 12 hours after exercise, but did *not* decrease muscle soreness or improve recovery compared to placebo at any time during the seven days after exercise. However, when the same dose of curcumin was taken for seven days *after* the exercise session, a significant **reduction in muscle soreness** as well as **improved muscle strength and range of motion** were observed starting about 3 to 6 days after the exercise session. Taken after exercise, curcumin also reduced blood levels of creatine kinase (a marker of muscle damage), but did not reduce markers of inflammation ([Tanabe, Scand J Med Sci Sports 2018](#)).

Other studies that have suggested a benefit include two that used a bioavailability-enhanced curcumin, [Meriva](#): One gave 20 healthy young men 200 mg of curcumin (from 1 gram of Meriva) at breakfast and dinner for four days; they experienced significantly less soreness in their front thighs 48 hours after intense treadmill exercise (on the third day of treatment) than men given placebo ([Drobnic, JISSN 2014](#)). The other involved 50 young male rugby players with muscle and/or joint pain due to overuse or injury who were given *AlgoCur* (containing 1 gram of Meriva) or traditional anti-inflammatory medication for up to 10 days. Both groups reported similar decreases in self-reported pain and improvements in physical function. However, it is not possible to draw conclusions from this study because there was no placebo-control and those taking curcumin were permitted to take anti-inflammatory drugs as needed ([Di Pierro, Eur Rev Med Pharmacol Sci 2017](#)).

Another small, placebo-controlled study in young healthy men found that 2,500 mg of curcumin taken twice daily (a total daily dose of 5,000 mg providing roughly an equivalent amount of curcuminoids) 2 days prior to, and 3 days after, intense leg exercise moderately reduced leg pain during subsequent exercise (24 and 48 hours later), indicating a reduction in **delayed onset muscle soreness (DOMS)**. Effects on biochemical markers of inflammation, however, were inconclusive ([Nicol, Eur J Appl Physiol 2015](#)). A small study among healthy young men and women given 200 mg of curcuminoids (from 1 gram of [CurcuWIN](#)) daily for two months showed significantly reduced thigh muscle soreness 24 hours after muscle damaging exercise compared to placebo; however, there was no significant reduction in soreness one hour after exercise, nor 2 and 3 days after exercise, compared to placebo. The curcuminoids reduced a marker of muscle damage (creatine kinase) two days after the exercise, but did not reduce other markers of inflammation, compared to placebo. A lower dose (50 mg of curcuminoids from 250 mg CurcuWIN) reduced muscle damage, but did not significantly decrease soreness ([Jager, FASB J 2017](#)).

A study among 22 healthy, young men and women found that taking 500 mg of curcumin standardized to 95% curcuminoids (Curcumin 95, Jarrow Formulas – providing 475 mg of total curcuminoids from [Curcumin C3 Complex](#)) twice daily starting six days before a single session of high-intensity exercise and continuing for three days afterward modestly decreased muscle soreness up to three days after exercise compared to placebo. In addition, while the placebo group lost muscle power 7 days after exercise, the curcumin group maintained it. However, curcumin did not reduce blood markers of muscle damage or inflammation compared to placebo. The study was partially funded by the McCormick Science Institute ([Hillman, J Diet Suppl 2021](#)).

Studies that failed to show a benefit include one in which a daily dose of 400 mg of a curcumin formula containing 80 mg curcumin plus fats to enhance absorption (Longvida® Optimized Curcumin) was given to healthy young men and women for two days before and four days after leg press exercises (designed to induce muscle damage). The curcumin did not reduce muscle soreness compared to placebo, but it *did* result in somewhat smaller increases in biological markers of inflammation ([McFarlin, BBA Clinical 2016](#)). Another placebo-controlled study in France gave athletes 6,000 mg of curcumin plus 60 mg of the bioavailability enhancer piperine daily (divided into 3 doses) for two days before and after exercise-induced muscle damage. The curcumin did not limit muscle damage or soreness and only limited loss of power in one of several exercises (sprinting) ([Delecroix, J Sports Sci Med 2017](#)).

A study in India among 15 healthy adults found that taking 2,000 mg of a turmeric extract that does not include curcumin (*Turmacin*® by Natural Remedies) in the morning with food for 7 days *slightly* increased the time until discomfort during a stair climbing exercise by 32 seconds compared to baseline. Although supplementation also *slightly* decreased self-reported knee pain intensity after exercise by 0.93 cm (on a 10-cm scale), this small change is not considered clinically meaningful. Furthermore, there was no placebo control, making it impossible to prove any benefit. One person reported mild indigestion while taking *Turmacin*, although this side effect resolved on its own ([Raj, J Diet Suppl 2023](#)).

Memory, Cognition, and Alzheimer's Disease

Curcumin has shown some short-term beneficial effects on **cognition (thinking and memory)** but longer-term studies have shown mixed results.

A small, but well-controlled study found that daily supplementation after breakfast with 400 mg of a patented curcumin formula containing 80 mg curcumin plus fats to enhance absorption (Longvida® Optimized Curcumin — Longvida funded the study) significantly improved some aspects of cognitive function and fatigue in healthy men and women ages 60 to 85. One hour after ingestion of the first dose, scores on a subtraction test improved by 16%, which was significantly more than the 2% increase with placebo; however, the effect was brief — when the subjects were retested 3 hours later no benefit was found. After 4 weeks of daily supplementation at the same dose, scores among those taking curcumin improved by 17% (vs. 3% with placebo) and fatigue was reduced by 11% (vs. 4 % with placebo). While these results are intriguing, it must be noted that no benefits were found on tests of word and picture recall ([Cox, J Psychopharm 2014](#)). However, a longer study funded by the U.S. NIH using a much higher dose of the same curcumin formula *did not* find benefit. In the study, 39 healthy men and women ages 45 to 74 took 2,000 mg of Longvida providing 400 mg of curcumin every morning on an empty stomach for three months; there was no significant improvement on measures of cognitive function, fatigue, or motor function such as hand grip, knee strength, walking/mobility, compared to placebo. It should be noted that, unlike the earlier study, Longvida was taken without food, which may have reduced its absorption — although Longvida is made with fats claimed to improve its absorption ([Santos-Parker, Nutr Healthy Aging 2018](#)). Another study with Longvida (providing 80 mg of curcumin taken with breakfast and, again, with dinner), showed that, after 16 weeks, it did *not* improve **blood flow to the brain** in older individuals (ages 50 to 80) in Australia who were sedentary and obese. The placebo-controlled trial also failed to show benefits with regard to blood pressure and cholesterol levels and there was no benefit from adding Longvida to **fish oil** supplementation (1,000 mg of DHA and 200 mg EPA taken with breakfast and dinner). The fish oil alone, however, showed some cardiovascular benefits, such as reductions in heart rate and triglycerides and an increase in HDL cholesterol, as well as reduced stiffness of the cerebral arteries but no significant effect on blood flow to the brain ([Kuszewski, Nutr, Met Cardio Dis 2020](#)).

Another small, but placebo-controlled study found that taking a capsule with 1,000 mg of turmeric powder with a nutritionally-bland breakfast resulted in improvements in short-term memory in people aged 60 years or older who were newly diagnosed with pre-diabetes. When tested six hours after taking the turmeric, scores were 2.9 (out of a possible 3.0) on a test to recall numbers in sequence, compared to 2.6 prior to turmeric. Scores did not improve among those who received placebo. Interestingly, turmeric had no effect on blood sugar or insulin levels. The study also evaluated the effects of taking 2 grams of cinnamon, which had no effect on any of the parameters measured ([Lee, Asia Pac J Nutr 2014](#)).

A long-term study in Australia among older adults (mainly in their 60s) with normal cognitive function found that taking high-dose curcumin daily had no beneficial effect on cognitive function, nor on mood or general quality of life, compared to treatment with placebo over a 12-month period. The curcumin used was BCM-95 CG (Biocurcumin – 88% total curcuminoids) given as a 500 mg capsule taken 3 times a day after meals with water. A fairly high percentage (26%) of those taking curcumin withdrew from the study due to side effects – most of which were gastrointestinal in nature, compared to only 4% of those taking placebo. According to the researchers, the rate of side effects would likely have been lower had the dose been gradually ramped-up rather than given at the full amount at the beginning of the study ([Rainey-Smith, Br J Nutr 2016](#)).

A double-blind study among 40 older adults with **normal cognition or mild cognitive impairment** found that taking 90 mg of an enhanced bioavailability curcumin formula (Theracurmin, which is 30% curcumin, from Theravalues Corp. which funded the study) twice daily for 18 months modestly improved measures of short-term memory, verbal memory and attention compared to placebo. About 19% of participants in the curcumin group reported gastrointestinal side effects (transient abdominal pain, gastritis, or nausea) compared to 10.5% of those in the placebo group. Those in the placebo group showed slight increases (on PET scans) in amyloid beta plaque and tau tangles in the hypothalamus and these increases were not found in the curcumin group, but no other significant differences between the groups were found in other parts of the brain. Although such changes are associated with Alzheimer's disease, the value of these findings is unclear ([Small, Am J Geriatr Psychiatry 2017](#)). Several authors of the study have a financial interest in a tracer agent used in the PET scan and have been [warned by the FDA](#) for claiming it can be used to diagnose neurological conditions.

Laboratory and animal studies have shown curcumin inhibits several biological and chemical processes in brain cells associated with the development of **Alzheimer's disease**, including inflammation, oxidative stress and the formation and accumulation of amyloid-beta proteins (which form brain plaques associated with Alzheimer's). Animal studies also suggest curcumin may work similarly to acetylcholinesterase inhibitors, a class of drugs (such as donepezil (Aricept) and galantamine (Razadyne)) that may slow the progression of Alzheimer's symptoms. In mouse models of the disease, curcumin given orally appears to reach the brain and reduce oxidative damage and memory impairment ([Frautschy, Neurobiol Aging 2001](#)). However, results have been less promising in clinical trials of curcumin in people with Alzheimer's. For example, a preliminary study found that curcumin given to Alzheimer's disease patients did not significantly improve mental functioning compared to placebo ([Baum, J Clin Psychopharm 2008](#)). Another study in people with mild to moderate Alzheimer's found that curcumin did not improve cognitive function or decrease amyloid-beta (as measured in cerebrospinal fluid) compared to placebo ([Ringman, Alzheimers Res Ther 2012](#)). Curcumin (100 mg of curcumin from turmeric powder capsules) taken daily for three months has been reported to reduce agitation, anxiety and irritability in three people with severe Alzheimer's disease who were also taking an acetylcholinesterase inhibitor ([Nozomi, Ayu 2012](#)). In a review of the evidence for curcumin and Alzheimer's disease, the researchers concluded that, to date, studies in people "have not been able to generate the anticipated benefits of curcumin," noting that this may be due, in part, to the low bioavailability and absorption of curcumin and the severity of disease progression in the people who participated ([Goozee, Br J Nutr 2015](#)).

Interestingly, in adults with insulin resistance, a bioavailability-enhanced form of curcumin appeared to cause a decrease in blood levels of amyloid-beta proteins (see [Insulin Resistance and Diabetes](#) below).

Depression

Curcumin and turmeric root extract may help treat depression, although effects may take two to three months. Required dosage may be lower with bioavailability-enhanced curcumin (250 mg twice daily) than with regular turmeric root extract (up to 750 mg twice daily).

A small but controlled, 8-week study among people with **major depression** found partial support for antidepressant and anti-anxiety effects of curcumin. Patients received either placebo or curcumin (500 mg of BCM-95) twice daily and remained on pharmaceutical antidepressants during the study. At four weeks into treatment, depressive symptoms had improved equally for both groups, but from weeks 4 to 8 curcumin was significantly more effective than placebo in improving depressive symptoms. Greater efficacy was noted among individuals with atypical depression. One of the ways curcumin may affect depression, according to the researchers, is through an immune-inflammatory pathway ([Lopresti, J Affect Disorders 2014](#)). A subsequent, larger study among people with major depression (about half of whom were taking a prescription antidepressant) found that a lower dose (250 mg twice daily) of BCM-95 taken for three

months significantly reduced symptoms of depression, as well as anxiety, compared to placebo, and was as effective as the higher dose of 500 mg twice daily ([Lopresti, J Affect Disorders 2016](#)). As in the previous study, curcumin's effects became significant compared to placebo after the first 4 weeks, and greater efficacy was found in those with atypical depression.

In addition, a study in Thailand showed that curcumin supplementation was more effective than placebo in improving symptoms of depression in adults who were already taking an antidepressant (fluoxetine (Prozac), sertraline (Zoloft), trazodone (Desyrel) or mianserin (Tolvon)). The curcumin was given as a capsule containing 250 mg curcuminoids (192.5 mg of curcumin, 42.5 mg of demethoxycurcumin and 15 mg of bisdemethoxycurcumin) taken twice daily (before breakfast and dinner) for the first week. The dose was increased by 250 mg per week for three weeks, and then maintained at a dose of 1,500 mg per day for eight more weeks. Compared to placebo, significant improvements in symptoms of depression occurred 12 weeks after beginning supplementation with curcumin ([Kanchanatawan, Neurotox Res 2018](#)).

Another study in Thailand among 227 obese adults (average age 61) with well-controlled type 2 diabetes, most of whom had moderate to moderately severe depression but were *not* taking antidepressants, showed that taking three capsules of turmeric root extract, each standardized to contain 250 mg of curcuminoids twice daily (total daily dose of curcuminoids: 1,500 mg) for 12 months reduced the self-reported severity of depression by at least one stage (for example, from moderate to mild) in 20.4% of people compared to only 2.6% of those in the placebo group, and this between-group difference was statistically significant ([Yaikwawong, Nutrients 2024](#)).

Insulin Resistance and Diabetes

In healthy people, curcumin may lessen increases in blood sugar and insulin after eating. It may also decrease the risk of developing prediabetes in people who are overweight and have modest benefits in people with insulin resistance or prediabetes.

In people with diabetes, there is mixed evidence as to whether curcumin supplementation improves blood sugar control and the effects may be very modest, at best. However, a preliminary study suggested it may reduce the risk of atherosclerotic cardiovascular disease.

Taking curcumin with a meal can minimize the increase in **blood sugar and insulin levels** that occurs after eating. A small study in Australia among 15 healthy young men and women (average age 26) found that taking 180 mg of curcumin (from two tablets of the bioavailability-enhanced curcumin formulation *Meriva*) immediately before consuming breakfast (toast, peanut butter and chocolate milk, providing 56 g carbohydrate, 22 g fat and 21 g protein) reduced the increase in blood sugar and insulin levels one hour after the meal by 61% and 26%, respectively, compared to placebo. Interestingly, taking the same amount of curcumin with fish oil (1.2 grams of fish oil providing a total of 240 mg EPA + 860 mg DHA) had the same effect on insulin levels as curcumin alone but slightly blunted curcumin's effect on blood sugar ([Thota, Sci Rep 2018](#)).

The same researchers subsequently conducted a 3-month study among 29 men and women (average age 52) with **insulin resistance**. They found that taking 1,000 mg of bioavailability-enhanced curcumin (*Meriva*) providing 180 mg of curcumin daily, significantly reduced insulin resistance compared to placebo (- 0.3 decrease in HOMA2-IR vs. a slight increase of 0.01). The curcumin also reduced blood serum levels of two compounds (glycogen synthase kinase-3, known as GSK-3, and islet amyloid polypeptide, known as IAPP), which are associated with the development of both diabetes and [Alzheimer's disease](#) ([Thota, Nutrients 2020](#)).

However, in people with **type 2 diabetes**, curcumin supplementation appears to have only a slight benefit, at best, on blood sugar control. A study in Japan among 33 men and women with impaired glucose tolerance or **non-insulin dependent type 2 diabetes** found that 90 mg of a bioavailability-enhanced curcumin formulation ([Theracurmin](#), Theravalues Inc.) taken twice daily (after breakfast and dinner – a total of 180 mg *Theracurmin*, providing 54 mg of curcumin per day) for six months did *not* lower HbA1c (a measure of blood sugar over time) compared to placebo. Theravalues supplied the *Theracurmin* but did not fund the study ([Funamoto, J Diabetes Res 2019](#)). A study in Brazil among 61 men and women (average age 62) with type 2 diabetes who were not taking insulin found that those who took one capsule containing 500 mg of dry curcumin extract (standardized to contain 90% curcumin plus 5 mg of piperine) once daily on an empty stomach for 4 months had a slight but statistically significant decrease in HbA1c, but no improvements in fasting blood sugar, insulin levels, or HOMA-IR (a measure of insulin resistance) compared to placebo ([Neta, Int J Food Sci Nutr 2021](#)).

Interestingly, a preliminary, 14-week study in Egypt among 72 adults (average age 60) with **type 2 diabetes** and cardiovascular risk factors found that taking 500 mg of turmeric root and root extract (*Puritans Pride Turmeric Curcumin 500 mg*) three times daily (total daily dose: 1,500 mg) did *not* significantly improve fasting blood sugar or HbA1c, but did reduce cardiovascular risk factors. The turmeric group showed significantly greater reductions in systolic blood pressure (-5.2 vs +1.5 mmHg), diastolic blood pressure (-9.5 vs -2.1 mmHg), and LDL ("bad") cholesterol (-39.9 vs -12.5 mg/dL), and greater increase in HDL ("good") cholesterol (+5.1 vs -0.8 mg/dL) compared to placebo, but not in total cholesterol or triglycerides. A weakness of this study is that it was not blinded, i.e., the investigators knew who received turmeric and placebo ([El-Rakabawy, Sci Rep 2025](#)). The supplement used in the study contained 450 mg of turmeric root and 50 mg of turmeric root extract (standardized to 95% curcuminoids) per dose (i.e., about 60 mg of curcuminoids per dose). It is unclear if these benefits would be seen in people *without* diabetes, as people with diabetes have about twice the risk for heart disease and stroke ([NIDDK, Last Reviewed 4/2021](#)).

On the other hand, a study in Thailand among 229 adults with type 2 diabetes treated with metformin, but no other antidiabetes drug, showed that taking curcumin extract containing 750 mg of curcuminoids twice daily (1,500 mg/day of curcuminoids) for 12 months caused a modest but statistically significant reduction in HbA1c (-0.16%), fasting blood sugar (-8.16 mg/dL), insulin (-1.42 uU/mL), insulin resistance (HOMA-IR: -0.36), and leptin (a hormone that has been linked with insulin resistance) (-4.42 mcg/mL), as well as an increase in beta-cell function (HOMA-beta: +22.94) and adiponectin (a hormone that regulates insulin sensitivity and blood sugar metabolism) (+5.76 mcg/mL) compared to baseline. All of these changes were statistically significant compared to the placebo group, although, in some cases, the between-group differences were not statistically significant until 6 to 9 months after starting supplementation. Side effects included abdominal pain, diarrhea, and headache, but no adverse effects on kidney or liver function were observed ([Yaikwawong, Nutr J 2024](#)).

Preliminary research shows that, taken over a longer period of time, curcumin may lower the chances of **prediabetes** (blood sugar levels somewhat higher than normal) advancing to actual **diabetes**. A study of middle-aged, slightly overweight individuals in Thailand ([Chuengsamarn, Diabetes Care 2012](#)) found that over nine months, none of the 97 subjects randomized to daily treatment with curcumin (1.5 grams of curcuminoids/day in 2 divided doses) became diabetic, but 19 of 104 subjects receiving a placebo did. Curcumin appeared to boost activity of the insulin-secreting cells in the pancreas.

Fatty Liver Disease

*In people with **metabolic dysfunction-associated steatotic liver disease (MASLD)**, formerly known as non-alcoholic fatty liver disease (NAFLD), several short-term studies suggest that supplementation for two months with enhanced bioavailability curcumin formulations providing 70 mg to 1,000 mg of curcumin daily improves liver health compared to placebo, although not all studies have found a benefit. Among people with advanced disease (MASH), bioavailability-enhanced curcumin may help reduce liver inflammation and prevent further damage. (Also see our article [Do any supplements help with fatty liver disease?](#))*

A study in China among 71 men and women (average age 41) with non-alcoholic simple fatty liver disease found that supplementation with 500 mg of curcumin (taken as two capsules 30 minutes after breakfast) for 5 ½ months decreased liver fat from baseline by 4.2%, compared to a 1.7% *increase* in liver fat among those who took a placebo, and the difference between groups was statistically significant, although supplementation did not decrease liver *stiffness* compared to placebo. Those who took curcumin also had a slight decrease in blood levels of ALT (but not AST), and modest, but statistically significant decreases in body weight, triglyceride levels, fasting blood sugar levels and HbA1c (a measure of blood sugar levels over time) compared to the placebo group, which had slight increases in these measures ([He, Am J Clin Nutr 2024](#)).

Most other studies showing a benefit were conducted in Iran. These include a study using an "amorphous dispersion preparation" of curcumin ([Rahmani, Phytother Res 2016](#)) and a study using a phytosomal formulation a complex of curcumin and soy phosphatidylcholine ([Meriva](#)) ([Panahi, Drug Res \(Stuttg\) 2017](#)). More recent studies in Iran have used 500 mg of curcumin with 5 mg of Bioperine (C3 Complex, Sami Labs) taken once daily by men and women with mild to moderate NAFLD. In one such study, this was taken for three months, resulting in significantly decreased ALT, AST and ALP liver enzymes levels and disease severity scores, but no decrease in total or LDL cholesterol and no improvements in measures of blood sugar or insulin control compared to placebo ([Panahi, J](#)

[Cell Biochem 2019](#)). In another study, this was taken once daily for 12 weeks and significantly decreased ALT and AST liver enzymes, compared to placebo. There were also modest decreases in triglycerides (-28 mg/dL) total cholesterol (-22 mg/dL), and LDL cholesterol (-14 mg/dL), while there were no significant changes in these measures among those who took placebo. However, supplementation did *not* decrease liver fibrosis (scarring) ([Sharifi, Phytother Res 2023](#)).

In contrast, a study in Denmark among 36 obese men and women, most of whom had **mild fatty liver** (average hepatic fat content about 12%), found that 1,000 mg of a phytosomal curcumin formulation (*Mervia*, providing 400 mg of curcuminoids) taken twice daily for six weeks did *not* decrease liver fat content, BMI, or subcutaneous or visceral fat mass (fat around organs) compared to placebo. In addition, supplementation did not improve most blood markers of liver inflammation, although there was a slight decrease in gamma glutamyltransferase (GGT – elevated levels of which can indicate liver disfunction) compared to placebo. The researchers noted that participants were not required to fast before liver imaging (using magnetic resonance spectroscopy, or MRS), which may have affected imaging results ([Hellmann, Diabetes Obes Metab 2022](#)).

A study in Italy among 51 people with **nonalcoholic steatohepatitis or NASH** (an advanced form of MASLD and now called MASH) showed that taking 2,000 mg of phospholipid curcuminoids (*Meriva* by Indena S.p.A., which funded the study) daily for 15 months lead to resolution of inflammation, and no worsening of liver scarring (fibrosis) in 62% of participants compared to only 12% in the placebo group. NAFLD activity score or NAS, a measure of disease activity, decreased (i.e., improved) by 2.81 points (on a scale of 0 to 8) in the *Meriva* group compared to only 0.76 points in the placebo group. Thirteen out of 16 people in the *Meriva* group who had chronic kidney disease (CKD) experienced regression of CKD by the end of the study compared to none of the participants in the placebo group ([Musso, Hepatology 2024](#)).

Be aware that there are no long-term safety studies on the effects of curcumin supplementation on liver health. Short-term studies in people with moderate daily doses of curcumin (< 500 mg without bioavailability enhancement) have generally not indicated a problem ([Kedia, World J Gastrointest Pharmacol Ther 2017](#); [Khajehdehi, J Renal Nutr 2012](#)), but animal studies suggest that high doses of curcumin for a long period of time might be harmful to the liver ([Kandarkar, Indian J Exp Biol 1998](#)) and there are [cases of liver injury occurring in people taking turmeric/curcumin supplements](#).

Weight Loss

A review of 11 randomized, placebo-controlled studies among adults with conditions such as pre-diabetes, obesity, metabolic syndrome, or non-alcoholic fatty acid liver disease concluded that curcumin had a modest but significant effect in **reducing body weight and BMI** (body mass index). On average, study participants lost 2.5 lbs. of bodyweight, based on studies tending to be 3 to 12 weeks in duration. Curcumin was also found to reduce waist circumference (by about 1 to 1.5 inches), but only in people who were overweight taking at least 1,000 mg per day of curcumin for at least eight weeks ([Mousavi, Crit Rev Food Sci Nutr 2018](#)).

On the other hand, a study in Brazil among 51 men and women (average age 48) with mild to moderate [inflammatory bowel disease](#) (most of whom had ulcerative colitis and were overweight/obese) found that taking either 1,000 mg of curcumin or 1,000 mg of curcumin plus 10 mg of piperine once daily (as capsules taken after a fat-containing meal) for 12 weeks without changes in diet or activity levels did *not* decrease body weight or BMI compared to placebo. There was a slight increase in fat-free mass (lean muscle) in the curcumin + piperine group (3 of 17 participants in the curcumin + piperine group transitioned from “reduced” to “adequate” fat-free mass status, compared to just 1 participant in each of the curcumin-only and placebo groups), but no increase in muscle *strength*, compared to placebo ([Martins, Eur J Nutr 2025](#)).

Cancer

Curcumin has been shown to suppress proliferation of a wide variety of **cancer** cell types in the laboratory, but research showing clear benefit in people is limited.

A study of 64 adult smokers found that taking 4 grams of pure curcumin powder for 30 days reduced the number of aberrant crypt foci (an early change in the colon that might lead to **colon cancer**) by 39%. Test results indicated that this activity was achieved via absorption and circulation of curcumin through the blood stream, rather than direct effects of curcumin in the colon ([Carroll, Cancer](#)

[Prev Res Phila 2011](#)).

A study in Australia among 18 people with monoclonal gammopathy of undetermined significance (MGUS) or smoldering multiple myeloma (SMM), both of which are considered to be precursors to **myeloma** (a bone marrow cancer of white blood cells), showed that taking 8 grams of curcumin daily for 3 months decreased serum free light-chain ratio, a risk factor for disease progression, by about 37% compared to baseline in people with abnormal free light-chain ratio. However, it is unclear if this benefit reduces the percentage of patients who progress to myeloma compared to what occurs using the standard "watch and wait" strategy. The curcumin used in this study was a "C3" curcuminoid mixture supplied by Sabinsa Corp. Each 4-gram dose provided 3,600 mg of curcumin, 320 mg of desmethoxycurcumin, and 80 mg of bisdesmethoxycurcumin ([Golombick, Am J Hematol 2012](#)).

In another small study in people with myeloma, taking 4 and 8 grams of curcumin daily for up to one year significantly reduced levels of certain inflammatory markers (such as COX-2) and a protein that promotes myeloma tumor growth (NF- κ B), although it did *not* result in clinical improvements ([Vadhan-Raj, Blood 2007](#)). However, it has been reported that a 57-year-old woman with stage 3 myeloma who was no longer responding to traditional treatment began taking a daily dose of 8 grams of curcumin with Bioperine (dose not given) and once-weekly hyperbaric oxygen therapy and, during the next five years (up until the publication of the report), her myeloma remained stable with blood cell counts returning to normal range and maintaining a good quality of life ([Zaidi, BMJ Case Reports 2017](#)).

In a study of 21 patients with **pancreatic cancer** treated with 8 grams of curcumin daily, only two patients appeared to show a positive biological response (i.e., reduced progression or regression of cancer). The curcumin used in this study provided the same ratio of curcumin, desmethoxycurcumin, and bisdesmethoxycurcumin as the Golombick study above ([Dhillon, Clin Cancer Res 2008](#)).

A study in France among 44 men with metastatic castration-resistant **prostate cancer** who were receiving chemotherapy (docetaxel) and glucocorticoids (prednisone or prednisolone) found that taking 6,000 mg of curcumin daily (in divided doses taken in the morning, at lunchtime and in the evening) for seven days starting four days before each three-day chemotherapy treatment for six months *did not* improve progression-free or overall survival, PSA response rate or quality of life compared to the same medical therapy plus a placebo ([Passildas-Jahanmohan, Cancer Med 2021](#)).

Lowering Cholesterol

*There is mixed evidence on whether turmeric and curcumin can **lower cholesterol**. Curcumin formulations with enhanced bioavailability have generally shown better results than regular turmeric powder or curcumin, although even formulations with enhanced bioavailability appear to be much less effective than cholesterol-lowering medication.*

A 2014 review of studies failed to find a beneficial effect on cholesterol levels from turmeric or curcumin, although that review did not include studies of products with enhanced bioavailability ([Sahebkar, Clin Nutr 2014](#)). In contrast, a later review, in 2017, indicated that turmeric and curcumin can lead to modest improvements by lowering elevated LDL "bad" cholesterol and triglycerides — although they do not help raise HDL "good" cholesterol or lower total cholesterol levels. Curcumin formulations with [enhanced bioavailability](#) seemed to be more effective than turmeric powder, particularly with regard to lowering triglycerides (the review did not identify ideal dosage or formulations) ([Qin, Nutr J 2017](#)).

A subsequent study in Australia among older adults with high cholesterol levels (averaging 254 mg/dL total cholesterol and 169 mg/dL LDL) found that adding 1,000 mg of bioavailability-enhanced curcumin (*Meriva* — providing 200 mg of curcumin) each day to 25 grams of a phytosterol-enriched fat spread (*Logicol Original* — providing 2 grams of phytosterols) daily for one month resulted in average decreases in total and LDL cholesterol of 11% and 14.4%, respectively, as compared with decreases of 4.8% and 8.1% with only the phytosterol. Those who took only the curcumin had *slight but non-significant* decreases in total or LDL cholesterol ([Ferguson, Metabolism 2017](#)).

Consistent with earlier findings of no benefit with regular curcumin, a study in Iran among 114 overweight or obese adults (average age 49) with metabolic syndrome showed that taking 1 gram of curcumin, mixed in water with or without 1 billion cells of *Lactobacillus* probiotics, daily for 8 weeks while following a reduced-calorie diet (500 Calorie/day deficit) did *not* significantly reduce blood levels of

total cholesterol, triglycerides, or LDL cholesterol, or increase blood levels of HDL cholesterol, compared to placebo ([Mohammadi, Food Sci Nutr 2023](#)).

A study in the U.S. comparing the cholesterol-lowering effects of herbal supplements with that of cholesterol-lowering medication found that **taking bio-enhanced turmeric was significantly less effective than rosuvastatin (Crestor)**. The study, which included a total of 190 adults (average age 64) that were not taking statins or supplements to lower cholesterol but had elevated LDL cholesterol and a 5% to 20% 10-year risk of atherosclerotic cardiovascular disease, showed that those given 5 mg of rosuvastatin daily for 4 weeks had a significantly greater reduction in LDL cholesterol (-36.6%), total cholesterol (-23.6%), and triglycerides (-19.6%) compared to those given 4,500 mg/day of bio-enhanced turmeric. Neither group showed significant improvements in HDL cholesterol or high-sensitivity C-reactive protein (hs-CRP), a marker for heart disease. The bio-enhanced turmeric product used in the study was Bio Schwartz Turmeric Curcumin with Bioperine 1,500 mg, and the supplement was taken as three capsules/day. This study was funded by and conducted, in part, by an employee of AstraZeneca, which manufactures Crestor ([Laffin, J Am Coll Cardiol 2023](#)).

Reducing salt intake

Adding turmeric to food has been shown to reduce the amount of salt needed to add a salty flavor. In fact, a study found that only about 1/6 teaspoon (300 mg) of turmeric and slightly more than 1/8 teaspoon (900 mg) of salt made a serving of food taste almost as salty as adding slightly less than 1/2 teaspoon (2,400 mg) of salt. Adding bay leaf or "dry-cured ham aroma" to the mashed potatoes increased perceived saltiness 16% more than turmeric. Parsley also increased perceived saltiness, but not as much as turmeric. The effect of these spices on perceived saltiness was attributed to eugenol, an odorous compound found in all four spices ([Segura-Borrego, J Sci Food Agric 2024](#)).

Eye disease

Although preliminary studies suggest that curcumin may help people with **chronic anterior uveitis** (an autoimmune disease of the eye that causes symptoms such as redness, pain, light sensitivity and blurred vision), this has not been proven in a well-controlled study. For example, a study in Italy found that a tablet containing 600 mg of [Meriva](#) taken twice daily in addition to standard treatments (steroids, immune-suppressants, and/or eye drops) reduced symptoms of eye discomfort within 4 to 6 weeks and, after one year, 42% of patients reported reductions symptoms such as eye pain, blurring of vision and redness. The average number of relapses decreased from 275 per year prior to supplementation to 36 during supplementation. However, there was no placebo group, so conclusions cannot be drawn from this study. The researchers noted that the results suggest curcumin might be beneficial for other inflammatory eye conditions such as dry eye ([Pia, Clin Ophthalmol 2010](#)).

A study among 116 men and women with moderate **dry eye disease** found that those who took one capsule daily containing lutein (20 mg), zeaxanthin isomers (4 mg), curcumin (200 mg curcuminoids), and vitamin D3 (600 IU or 15 mcg) (*Blink NutriTears* sold by Bausch + Lomb) in the morning with or after a meal for 8 weeks had a 67% increase in tear production versus only 3% with placebo and a 57% reduction in the severity of dry eye symptoms such as pain, grittiness, and sensitivity to light, versus only 13% with placebo. However, despite the improvements, supplementation did *not* increase the rate of tear production to within normal ranges or decrease the need for artificial tears compared to placebo. The study was funded by Bausch + Lomb and OmniActive Health Technologies (which manufacturers the supplement) which employ some of the study authors ([Gioa, Front Ophthalmol 2024](#)). Be aware that, although there is some other preliminary evidence that curcumin may be helpful for dry eye, a *worsening* of dry eye with curcumin supplementation has also been reported by one CL member. (Also see our article about [supplements for dry eye](#)).

Use of turmeric or curcumin supplements was found to be associated with a much lower risk of developing **age-related macular degeneration (AMD)**, although this finding does not prove a cause-and-effect relationship. This was seen in a long-term study of nearly 181,000 adults, 66,804 of whom were using turmeric/curcumin supplements (any type). Those taking turmeric/curcumin were 77 to 89% *less likely* to develop any type of AMD and 54% less likely to have gone blind than non-users ([Alsoudi, JAMA Ophthalmol 2024](#)). While these findings could relate to other lifestyle factors of the supplement users ([Vandeerbeek, JAMA Ophthalmol 2024](#)), they could also relate to the anti-inflammatory and antioxidant effects of curcumin, particularly as the AREDS2 formula shown to slow the progression of AMD (see our [Vision Supplements Review](#)) is comprised primarily of antioxidants.

Other Uses

A small study in Brazil among children and adolescents with persistent **asthma** of generally moderate severity who were taking traditional asthma medications found that daily supplementation with curcumin for six months decreased nighttime awakenings and use of short-acting inhalers, and improved disease control compared to traditional treatment plus a placebo. The curcumin was given twice daily in capsules; each capsule contained 250 mg of root powder (including 11 mg of curcumin and 2 mg of demethoxycurcumin) and the daily dose for each child varied by weight (about 30 mg per kg of bodyweight per day). Approximate daily dosages by age were: 500 mg powder (20 mg curcuminoids) (7 - 10 yrs); 750 mg powder (30 mg curcuminoids) (11 - 14 yrs), and 1,000 mg powder (40 mg curcuminoids) (15 - 18 yrs) ([Manarin, J Ethnopharmacol 2019](#)).

A pilot study suggests that curcumin can reduce nasal symptoms associated with **seasonal allergy (allergic rhinitis)**. In this study, more than 200 people in China with a history of seasonal allergy took capsules containing 500 mg of curcumin (ORGANIKA Health Products, Canada) or a placebo (colored starch) daily for two months. Over this period there were significant improvements in sneezing, runny nose, and nasal congestion among those given curcumin, with the average total symptom score falling from 8 (out of a possible 12) down to 2.8, while there were no significant changes in the placebo group. Curcumin was also found to affect levels of certain inflammatory mediators, including decreases in interleukin-4 and TNF-alpha ([Wu, Ann Allergy Asthma Immunol 2016](#)).

There are anecdotal reports of curcumin being given to treat **psoriasis**, an autoimmune disease. However, a clinical trial with a curcuminoid complex showed a low response rate ([Kurd, J Am Acad Dermatol, 2008](#)).

There has been interest in curcumin as a neuroprotective agent for **Parkinson's disease** based on its anti-inflammatory and antioxidant effects, which laboratory and animal studies have suggested might prevent the loss of dopamine-producing nerve cells that can eventually lead to Parkinson's disease symptoms such as tremor, stiffness, balance problems, and slowness of movement. However, a small study in Iran among 42 people with mild to severe Parkinson's disease (average age 58), most of whom (75%) were men and all of whom were stabilized on standard treatments for Parkinson's disease (such as levodopa, pramipexole and others), showed that supplementing with 80 mg of curcumin incorporated into nanomicelles (tiny fat droplets to improve absorption) daily for 9 months did *not* improve motor or non-motor symptoms or quality of life compared to standard treatment plus placebo ([Ghods, Clin Neurol Neurosurg 2022](#)).

One small clinical study in healthy, sedentary postmenopausal women found that a daily dose of 150 mg (from six 25 mg pills) of a branded curcumin ingredient ([Theracurmin](#), Theravalues Corporation), taken for 2 months significantly lowered **systolic blood pressure**, but not diastolic blood pressure, compared to placebo. ([Akazawa, Nutr Res 2012](#)). The decrease in systolic blood pressure (about 5 points) was similar to that measured in women who did not take curcumin but participated in an aerobic exercise program at least 3 days per week for the duration of the study. The study does not note whether the six pills were taken together or divided throughout the day, or if they were taken with food. Curcumin has also been found to reduce systolic blood pressure in lupus patients with kidney nephritis (inflammation) taking corticosteroid and/or anti-hypertensive medications. A dose of 500 mg of turmeric (containing 22.1 mg curcumin) taken with each meal (a total daily dose of 66.3 mg curcumin) was found to significantly reduce systolic blood pressure after 3 months compared to placebo ([Khajehdehi, J Renal Nutr 2012](#)).

There has been interest in curcumin to help prevent attacks of **gout** due to research suggesting that curcumin and its metabolites bind to and may inhibit xanthine oxidase, an enzyme involved in producing urate (uric acid), which can form painful crystals in tissues ([Shen, Bioorg Med Chem Lett 2009](#)). Other laboratory research has suggested that curcumin can inhibit a transporter involved in re-absorbing urate from the kidneys, which leads to urate being returned to the blood ([Ao, Bioorg Med Chem 2017](#)). However, a study in Thailand among 39 people (average age 55) with persistent **hyperuricemia** (elevated urate in the blood) found that taking 500 mg of curcumin twice daily for 8 weeks did *not* reduce blood levels of urate or increase urinary excretion of urate compared to placebo, although both the curcumin and placebo groups showed a reduction in blood levels of urate compared to baseline (-0.6 mg/dL and -0.4 mg/dL, respectively) ([Bupparenoo, J Diet Suppl 2021](#)).

Laboratory studies suggest curcumin may **inhibit viruses** such as influenza, hepatitis C and Zika by interfering with a virus's ability to bind to cells and replicate ([Mounce Antiviral Res 2017](#); [Mathew, J Funct Foods 2018](#)). In animal studies, *injections* of curcumin have been shown to protect the lungs from injury and infection, including viral-induced acute respiratory distress syndrome, possibly by reducing inflammatory cytokines and other mechanisms ([Almatroodi, Molecules 2020](#); [Punithavathi, Br J Pharmacol 2000](#); [Avasarala, PLoS One 2013](#)). A small study among 10 children in Italy with **recurrent respiratory infections** found that a combination of curcumin (100 mg) and lactoferrin (900 mg) taken three times daily for four weeks had a beneficial effect on certain immune system cells ([Zuccotti, J Biol Regul Homeost Agents 2009](#)). A clinical study in Japan among 94 healthy people (average age 49) showed that 150 mg/day of curcumin (as *Theracurmin* or *Theracurmin Super* – both by Theravalues Corp., which funded the study), taken 10 to 15 minutes before breakfast and dinner for 12 weeks, reduced the number of days during which **common cold** symptoms were experienced by about 17 to 18 days compared to placebo. Among specific symptoms, *Theracurmin Super* reduced the number of days of sneezing (-10.5 days), runny nose (-14.5 days), stuffy nose (-11.2 days), and cough (-6.4 days) compared to placebo. *Theracurmin* did not reduce the number of days of any specific symptom. No between group differences in immunity tests or inflammatory markers were observed, and blood levels of curcumin were not measured in this study. *Theracurmin* is a crystalline form of curcumin with enhanced bioavailability due to its small particle size, and *Theracurmin Super* is a non-crystalline form of curcumin mixed with a "dispersing agent" that is reportedly twice as bioavailable as *Theracurmin* ([Kuwabara, J Diet Suppl 2023](#)).

Preliminary evidence from a laboratory study suggested that curcumin may inhibit the virus that causes **COVID-19** ([Khaerunnisa, Preprints 2020](#)). However, a small study *in people* conducted in Iran from November 2020 to April 2021 found little benefit. The study, among 46 men and women (ages 18 to 65, average age 47) with mild to moderate laboratory-confirmed COVID-19 who were not hospitalized, found that taking a capsule of curcumin (containing 500 mg of curcumin + 5 mg piperine) twice daily (morning and evening) for two weeks did not shorten the duration of cough, sore throat, headache, fever or chills, muscle pain or shortness of breath compared to placebo, although a significantly greater number of participants in the curcumin group reported improvement in general weakness (10 participants vs 5 in the placebo group). There were no significant differences between groups in red and white blood cell counts, inflammation (as measured by blood levels of CRP), or liver enzymes ([Askari, Trials 2022](#)).

Curcumin for Osteoarthritis in Dogs and Cats

A small study in dogs indicated that curcumin (4 mg/kg of body weight) taken twice daily could beneficially affect biochemical pathways associated with decreasing inflammation and pain and improving function in dogs with osteoarthritis; however, due to the size of the study, no conclusions could be drawn ([Colitti, Vet Immunol Immunopathol 2012](#)). The curcumin used in the study (*Curcuvet*, Indena) is a phytosomal formula containing 18-22% curcuminoids made by the makers of [Meriva](#) (which is also found in some joint supplements for pets, as well as for people). Curcumin as [BCM-95](#) has been shown to reduce certain markers of chronic low-grade inflammation in obese cats ([Leray, Br J Nutr 2011](#)), but there are no studies of its effects in cats with osteoarthritis. Recommended dosing of curcumin for dogs ranges from 50 mg to 250 mg three times daily (depending on the size of the animal) or ½ teaspoon daily of whole turmeric twice daily, and, for cats, 50 mg to 100 mg daily or ¼ teaspoon daily of whole turmeric ([Wynn, Veterinary Herbal Medicine 2007](#)).

Be aware that polysorbate 80, which may be included in some curcumin formulations for people can cause severe allergic reactions in some dogs ([Comblain, J Vet Pharmacol Ther 2016](#)). However, no adverse effects were reported in dogs when black pepper extract, a bioavailability enhancer, was added to a food formulation containing curcumin and other ingredients ([Head, J Alzheimers Dis 2012](#)); there do not appear to be such safety studies cats. Unpleasant body odor in dogs taking curcumin has been reported ([Dejonckheere, British Association of Veterinary Herbalists 2016](#)). In addition, as with people, turmeric/curcumin should be avoided in dogs and cats taking certain medications or with certain medical conditions (see [Concerns and Cautions](#)).

Additional clinical studies of turmeric and curcumin in a variety of diseases are ongoing.

Quality Concerns and Tests Performed:

Like other supplements, neither the FDA nor any other federal or state agency routinely tests turmeric supplements for quality prior to sale. However, quality issues for turmeric supplements can include the following:

- **Labeled Amount** Does the product really contain the expected amount of turmeric or curcuminoid compounds?
- **Purity** Does the product contain contaminants? Like other supplements made from plant roots, turmeric may be contaminated with heavy metals, such as lead, cadmium and arsenic -- although such contamination is much more likely to occur in products made from whole turmeric root rather than extracts. It has been reported, for example, that lead chromate, a yellow pigment, is commonly added to poor quality turmeric powder in Bangladesh to enhance its appearance, allowing it to compete with the brighter turmeric from India. Testing of turmeric in Bangladesh revealed that, depending on the region, 11% to 26% of samples exceeded that country's lead limit, while samples from India did not ([Forsyth, Environ Res 2019](#)), although turmeric products from both countries were recalled across the world between 2011 and 2017 ([Cowell, Pub Health Rep 2017](#)). In 2019, turmeric purchased from a local market in Las Vegas was suspected of causing elevated levels of lead in two children of related families in the area. Testing of the turmeric (one of which was imported from Afghanistan) revealed tremendously high lead levels of 2,000 to 3,000 micrograms per gram, such as that a 5 gram (1 tablespoon) serving could contain more than 1,000 mcg of lead (about 2,000 times the California limit for a warning label). The families were advised to discontinue use of the lead-containing turmeric and "obtain turmeric from reputable brands." Following discontinuation and medical treatment, the children's blood levels declined over a period of months ([Kappel, MMWR Morb Mortal Wkly Rep 2021](#)). Although the two children were reported to be developmentally normal, even low levels of lead can adversely affect neurobehavioral development and cognitive function in children, infants, and fetuses.

In adults, lead at somewhat higher levels can cause elevated blood pressure, anemia, and adversely affect the nervous and reproductive systems. Lead is of particular concern during pregnancy as the mother can transfer it to the fetus. Cadmium is a carcinogen and kidney toxin. Arsenic is a carcinogen and can damage organs.

- **Ability to Break Apart Properly** Once in your body, will the pill break down properly (disintegrate) so that it can release its contents?

ConsumerLab.com, as part of its mission to independently evaluate products that affect health, wellness, and nutrition, purchased many turmeric- or curcumin-containing supplements sold in the U.S. and Canada and tested them to determine whether they 1) possessed the claimed and minimum expected amount of curcuminoid compounds, 2) were free of unacceptable levels of lead, cadmium, and arsenic if listing whole turmeric root or over 250 mg of mineral ingredients, and 3) if regular tablets, could disintegrate properly in order to release their contents for absorption (see [Testing Methods and Passing Score](#)).

Interestingly, an analysis by the University of Arizona in Tucson of 87 turmeric/curcumin supplements purchased in early 2017 from local retailers yielded results similar to those found by ConsumerLab over the years: Most products contained the curcumin expected from labels. Heavy metal contamination above 0.5 ppb (0.5 mcg per gram) was noted in only one product -- a turmeric root powder, but not in any extracts. Although traces of solvents (which are used to make extracts) were found in most products, none exceeded USP limits ([Skiba, Mol Nutr Food Res 2018](#)). These findings support ConsumerLab's allocation of testing of herbal supplements: All products are tested for key compounds; all herb powders are tested for heavy metals; and solvent testing is generally not performed.

[Tests by supplement company, NOW](#), of 23 competing brands of turmeric/curcumin supplements purchased on Amazon in June 2021 found that one product (*Doctor Recommended Turmeric Curcumin*) contained only 3% of listed extract, while very low amounts of curcuminoids (8 to 21 mg per capsule) were found in four products (*Bioganix*, *FineVine*, *NutriFlair*, and *Pure by Nature*), each of which did not clearly state or claim its turmeric/curcumin content. Radiocarbon testing indicated that four products (*Vitpro*, *Me First Living*, *Eagle*, and *Primal Harvest*) contained "fossil fuel derived organic carbon," possibly indicating synthetic curcumin. Two products (*B'Leaf Nature* and *Eagle*) were above California's Prop 65 limits for lead. NOW also found animal gelatin in two products (*Bioganix* and *NutriFlair*)

labeled as vegetarian capsules. NOW tested two of its own products, with which it reported finding no problems but noted that most of the other products were labeled as "Turmeric Curcumin 1650mg," which could be deceiving, because they were formulas of mostly turmeric powder promising only 50 mg of curcuminoids from turmeric extract.

What CL Found:

Supplements

ConsumerLab.com's tests showed that the selected turmeric and curcumin supplements contained the amounts of **curcuminoids** expected from their labels, but these amounts ranged from just 42.3 mg (in two *Spring Valley Turmeric Curcumin Extract Gummies* – which include 2 grams of added sugar) to 1,056 mg (in two *Root2 Turmeric Extract C3 Complex* capsules).

An even smaller amount of curcuminoids (just 14.6 mg) was found in *Zyflamend*, a combination supplement marketed for pain relief and joint support that lists a total of 110 mg per daily serving of two different turmeric extracts as primary ingredients. (For more about *Zyflamend*, see our article: [Which Supplements Help with Arthritis?](#)) Most turmeric extract supplements for pain relief and joint support provide a much higher daily dose (hundreds of milligrams) of curcuminoids, and, typically, a higher concentration (generally 20% to 95%), of curcuminoids (we found only 13.3% in *Zyflamend*'s extracts). As *Zyflamend* contained a much smaller amount of curcuminoids than one might expect from a turmeric-containing supplement marketed for pain relief and joint support, we were "Unable to Approve" the quality of *Zyflamend* – although it passed our tests for heavy metals, such as lead.

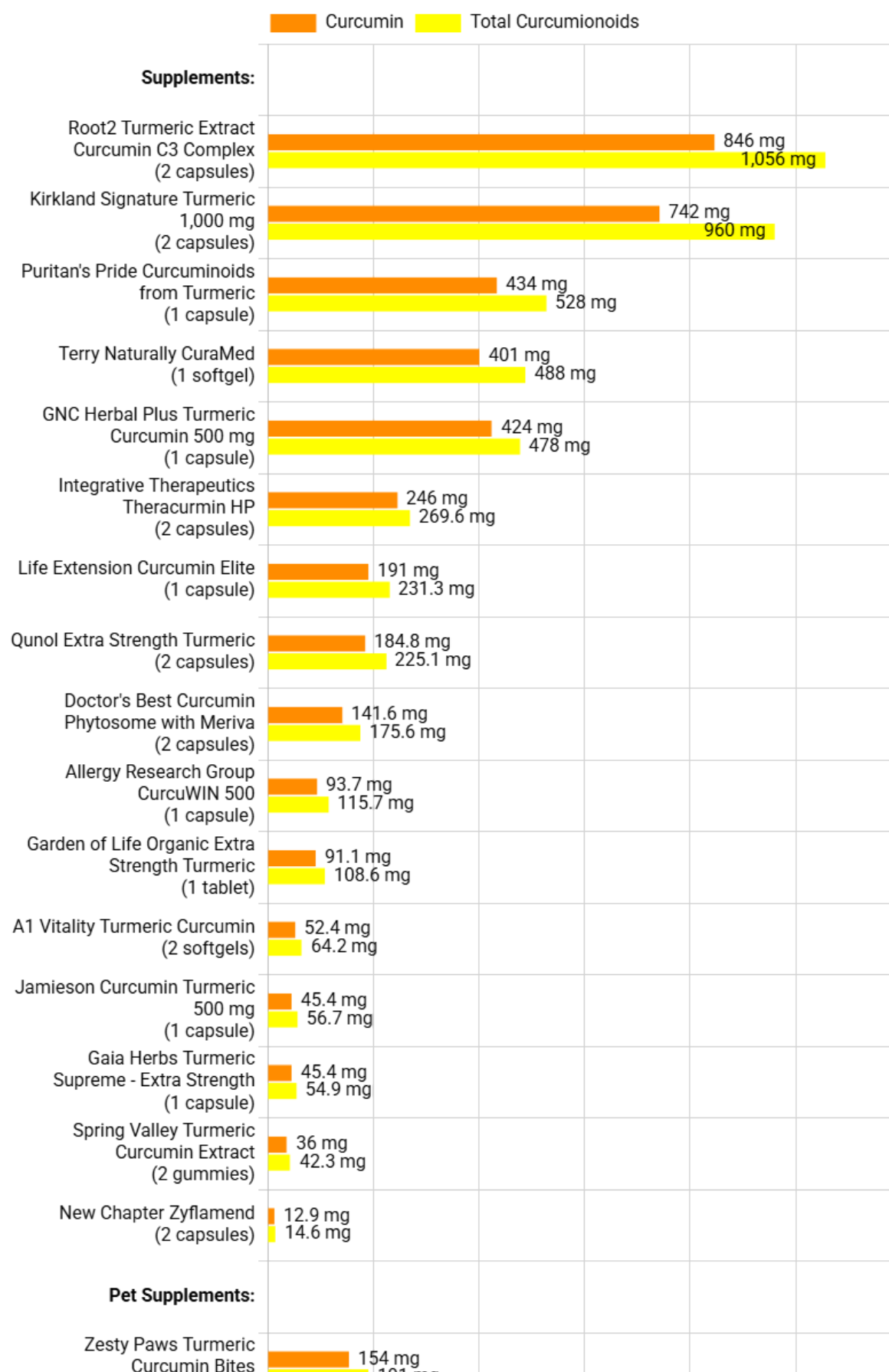
Lead contamination was discovered in one product, *Jamieson Curcumin Turmeric*, and this was confirmed in a second independent laboratory. The amount of lead per capsule was 1.1 mcg, just exceeding ConsumerLab's limit of 1 mcg per serving. The product is Canadian, but, if sold in California, this amount would require a statement on the label warning of possible reproductive harm (the California limit is 0.5 mcg of lead per daily serving. There is no limit in the rest of the U.S.) The lead likely came from the 500 mg of turmeric powder per capsule. ConsumerLab has found lead in other turmeric *powders* in the past. Lead contamination is not an issue in turmeric *extracts*, as the extraction process reduces impurities.

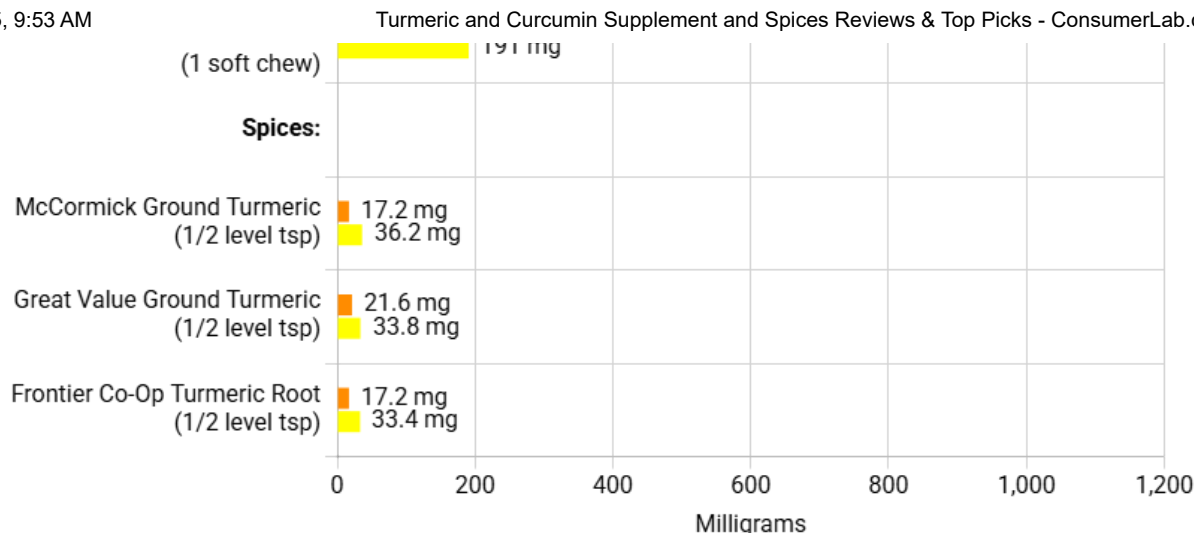
All tablets broke apart properly to release their ingredients.

A total of 15 supplements and 3 spices were Approved for quality, including four supplements tested through ConsumerLab.com's voluntary [Quality Certification Program](#).

<

Curcuminoids Found in Turmeric Supplement and Spices (Curcumin and Total Curcuminoids Per Serving)





Spices

As shown above, three turmeric spice products were also tested – all of which were Approved for quality – and each provided approximately 35 mg of curcuminoids per ½ level teaspoon. Although none exceeded ConsumerLab's limits for heavy metal contamination, *McCormick* had slightly more lead than *Frontier Co-Op* (organic), while *Great Value* (Wal-Mart) (organic) had the least lead. It is interesting to note that, per gram of turmeric powder, all of these products contained less than one-quarter the concentration of lead found in the *Jamieson* supplement described above.

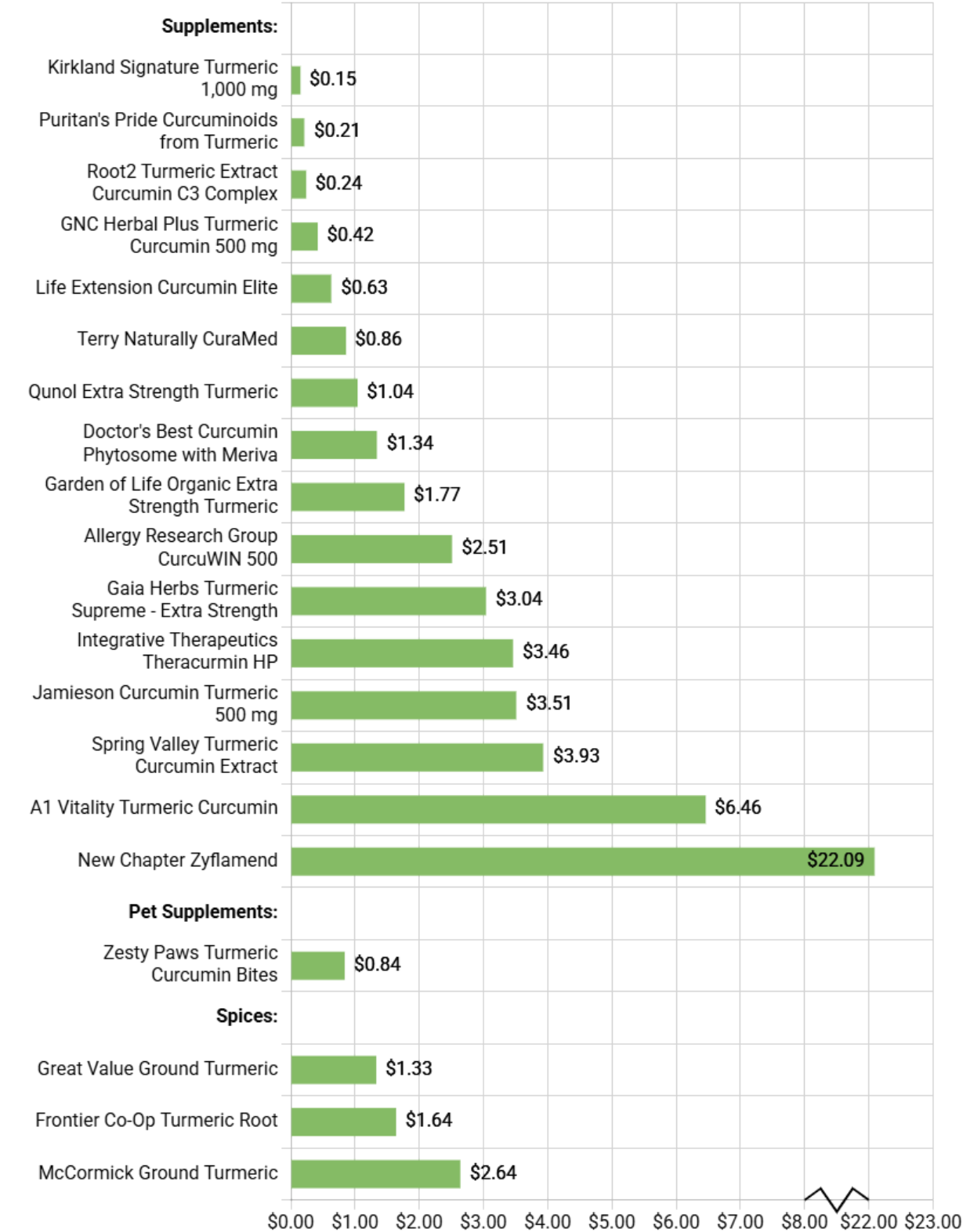
Cost

The cost to get a 500-mg dose of curcuminoids from turmeric and curcumin products ranged from just 15 cents (from *Kirkland Signature Turmeric 1,000 mg*) to **43 times that amount** or \$6.46 (*A1Vitality Turmeric Curcumin*), as shown in the graph below. The cost was even higher – \$22.09 – from *Zyflamend*, which lists turmeric extracts among its primary ingredients but contained little curcumin and other curcuminoids, although it does include many other ingredients.

Is it worth paying more for curcuminoids from some products? Not necessarily. Many of the higher cost supplements are special formulations that increase the absorption and bioavailability of curcuminoids, but this benefit generally exists only if you take turmeric with only water. If taken with a meal with fats or oils, these may offer no significant benefit over regular turmeric products. Other formulations that are more expensive are gummies, but the gummies from *Spring Valley* are not bioavailability-enhanced and don't seem to be worth the extra cost or the extra calories from the sugar they contain.

Interestingly, it is actually *less expensive* to get curcuminoids from ground turmeric spices than from some of the turmeric supplements. For example, a ½ teaspoon of *Great Value Ground Turmeric* costs about 9 cents and provides 33.8 mg of curcuminoids, while you would need 1 ½ gummies of *Spring Valley Turmeric Curcumin Extract* to get the same amount of curcuminoids at a cost of 25 cents. On the other hand, several of the turmeric extracts are much less expensive sources of curcuminoids than turmeric spice. Examples are the supplements from *Kirkland*, *Puritan's Pride*, *Root2*, *GNC*, and *Life Extension*.

Cost Per 500 mg Curcuminoids*



* Cost based on amount found.

Top Picks:

Supplements

Among the supplements Approved in testing, our **Top Pick Turmeric Supplement** is **Kirkland (Costco) Signature Turmeric 1000 mg**, which provides the second highest amount of curcuminoids per daily suggested serving of any product (960 mg per day from 2 vegetarian capsules) at the lowest cost for curcuminoids. A 2-capsule serving is only 28 cents. It includes 5 mg of black pepper extract per capsule that may help with absorption/bioavailability – but what will probably help more is taking each capsule *with a meal containing fats or oils* (see "[Absorption and Bioavailability](#)"). *Root2 Turmeric Extract Curcumin C3* is similar to *Kirkland* with slightly more curcuminoids but with about half the amount of black pepper extract and at higher cost (50 cents per 2 capsules) – it was a previous *Top Pick* (in 2019).

If you'd like to avoid black pepper extract due its [interactions with some medications](#) and you'll be taking turmeric with a fat-containing meal, our **Top Pick Turmeric Supplement Without Black Pepper** is **Puritan's Pride Curcuminoids from Turmeric**, which is also a highly-concentrated extract (93% curcuminoids), although more expensive the *Kirkland* at 22 cents per capsule.

If you are not able to take a turmeric supplement with a fat-containing meal, it would be best to use one of the products with enhanced absorption and bioavailability. Compared to taking an unformulated curcumin extract with water (from which very little of the curcuminoids will be absorbed), some of these special formulations can increase bioavailability by more than 100 times (for details see "[Absorption and Bioavailability](#)"). The formulation that has shown the greatest improvement in bioavailability over straight curcumin if taken without food is *NovaSol*, which is found in **A1 Vitality Turmeric Curcumin**, making it our **Top Pick for Enhanced Bioavailability Turmeric Supplement and for Supplement If Taken Without Food**. It is expensive in comparison to other products based on the amount of curcuminoids it contains, but it should enable you to take a lot less extract than other products. For example, a two-softgel serving (83 cents) of *A1 Vitality* contains only 60 mg of curcuminoids versus around 1,000 mg in *Kirkland* and *Root2*. However, *NovaSol* was shown in one study to increase the bioavailability of curcumin 9-fold compared to the C3 formulation in *Root2*, and by as much as 185-fold compared to plain curcumin when these were taken with only water.

For pets

For pets, we tested one product, *Zesty Paws Turmeric Curcumin Bites Multifunctional*. It contained the expected amount of curcuminoids, with each chew providing 191 mg of curcuminoids – which is in line with [recommended dosage for dogs](#), making it our **Top Pick for dogs**. It includes black pepper extract to increase bioavailability. (Black pepper is not listed as toxic to dogs by the ASPCA or American Veterinary Association, although the long-term safety of black pepper extract has not been evaluated in dogs).

Spices

ConsumerLab.com purchased three popular ground turmeric spices. Among these, **Great Value (Wal-Mart) Ground Turmeric – Organic** is our **Top Pick Ground Turmeric Spice**. All of the spices provided about the same amount of curcuminoids, but what sets *Great Value* apart is that it contained less than one-third the lead of the other two products (although none were "high" in lead) and it costs less than both: *Frontier Co-Op Organic Ground Turmeric Root* costs more and provides less turmeric (\$4.68 for a 1.41 oz jar), while *McCormick Ground Turmeric* is \$4.99 for nearly half the amount (0.95 oz) and is not organic. Interestingly, the *Great Value* is somewhat denser than the other others, with a ½ level teaspoon weighing 1.2 gram versus 0.9 gram for *Frontier* and 1.0 gram for *McCormick*.

(Note: In 2019, we tested the same *McCormick* product against *The Spice Hunter* and *Simply Organic* and we found notably higher concentrations of curcuminoids in *McCormick* than in the others).

Test Results by Product:

Below are two tables. The first displays test results for 17 turmeric- or curcumin-containing **supplements**. Thirteen were selected for testing by ConsumerLab.com and four others (each indicated with a CL flask) are included for having passed the same testing through ConsumerLab.com's voluntary [Quality Certification Program](#). Products listed as "Approved" met their label claim and ConsumerLab.com's standards for turmeric supplements. Shown in the 2nd column are the amounts of curcuminoids claimed and

found, while the amounts of heavy metals found in root powders are in the 3rd column, along with pill size and serving suggestions. The 4th column shows the cost of the product and the cost to obtain 500 mg of curcuminoids based on amount found. Notable features are in the 5th column, and the full list of ingredients is in the last column.

The second table displays test results for three **ground turmeric spices** that were selected by ConsumerLab.com for testing. Spices that were "Approved" contained at least 3% curcuminoids (the minimum we expect from turmeric root powders). The ingredient description for each spice appears in the 2nd column of the table. Amounts of curcuminoids and heavy metals found are in the 3rd column. Notable features are in the 4th column, and cost comparisons are in the last column.

Results of ConsumerLab.com Testing of Turmeric Supplements					
(Price Checks are not included in printed reviews)					
Approval Status	Claimed	Directions	Cost Per	Notable Features	Full List of Ingredients Per Serving
Product Name	Turmeric / Curcumin Per Serving	Pill Size Heavy Metals	Suggested Serving [Price Per 500 mg Curcuminoids Found] Price		
Extract Only:					

➤ APPROVED ➤ Top Pick for enhanced bioavailability and for supplement if taken without food A1 Vitality Turmeric Curcumin  Dist. by A1 Vitality	2 softgels 1,000 mg NovaSOL® curcumin extract 60 mg curcuminoids [50 mg curcumin] ✓ [Found 64.2 mg curcuminoids and 52.4 mg curcumin]	As a food supplement for adults, two (2) softgels daily with an 8 oz glass of water, preferably at mealtimes, or as directed by a healthcare practitioner. Do not exceed directions for use. Medium/large softgel	\$0.83/2 softgels [\$6.46] \$24.99/60 softgels	Free of: Artificial Flavor, Color, Dairy, Gluten. Preservatives, Soy Sodium, Sugar, Sweetener, Wheat and Yeast. Made In The USA.	2 softgels Calories 10 cal, Total Fat 0.0 g, NovaSOL® Curcumin (Curcuma Oleoresin of Natural Origin) [Total NovaSOL® Curcuminoids 60 mg, Total NovaSOL® Curcumin 50 mg] 1,000 mg. Ingredients: NovaSOL® Curcumin (Polysorbate 80 (emulsifier) Additional Information 2 softgels Calories 10 cal, Total Fat 0.0 g, NovaSOL® Curcumin (Curcuma Oleoresin of Natural Origin) [Total NovaSOL® Curcuminoids 60 mg, Total NovaSOL® Curcumin 50 mg] 1,000 mg. Ingredients: NovaSOL® Curcumin (Polysorbate 80 (emulsifier), Turmeric Extract (Curcumin longa) [rhizome]). Shell Ingredients: Gelatin, Vegetable Glycerin and Purified Water.
➤ APPROVED ➤ Allergy Research Group® CurcuWIN® 500  Dist. by Allergy Research Group®	1 vegetarian capsule 500 mg CurcuWIN® turmeric extract 100 mg curcuminoids ✓ [Found 115.7 mg curcuminoids and 93.7 mg curcumin]	1 capsule one or two times daily with food, or as directed by a healthcare practitioner. Large vegetarian capsule	\$0.58/vegetarian capsule [\$2.51] \$34.89/60 vegetarian capsules	Hypoallergenic.	1 vegetarian capsule CurcuWIN® Turmeric (<i>Curcuma longa</i>) (Root) Extract (min 20% Curcuminoids) 500 mg. Other Ingredients: Hydroxypropyl methylcellulose, microcrystalline cellulose, silicon dioxide.

APPROVED Doctor's Best® Curcumin Phytosome® with Meriva®  Dist. by Doctor's Best, Inc.	2 veggie caps 1,000 mg Curcumin Phytosome® (Meriva®) extract 180 mg curcuminoids ✓ [Found 175.6 mg curcuminoids and 141.6mg curcumin]	Take 2 capsules daily, with food, or as recommended by a nutritionally- informed physician. Large veggie cap	\$0.47/2 veggie caps [\$1.34] \$14.14/60 veggie caps	<i>Non-GMO / Gluten Free / Soy Free/ Vegan.</i>	2 veggie caps Curcumin Phytosome® (Meriva®): Phospholipid-Curcuminoids Complex [Curcumin and other curcuminoids, minimum 180 mg] 1,000 mg. Other Ingredients: Modified cellulose Additional Information 2 veggie caps Curcumin Phytosome® (Meriva®): Phospholipid-Curcuminoids Complex [Curcumin and other curcuminoids, minimum 180 mg] 1,000 mg. Other Ingredients: Modified cellulose (vegetarian capsule), cellulose, magnesium stearate (vegetable source), silicon dioxide.
APPROVED Gaia Herbs® Turmeric Supreme® - Extra Strength  Dist. by Gaia Herbs, Inc.	1 vegan liquid phyto-cap® 482 mg proprietary extract blend 36 mg curcuminoids ✓ [Found 54.9 mg curcuminoids and 45.4 mg curcumin]	Adults take 1 capsule 1-2 times daily with meals. Large vegan liquid phyto-cap®	\$0.33/vegan liquid phyto- cap® [\$3.04] \$39.99/120 vegan liquid phyto-caps®	Black pepper fruit supercritical CO₂ extract 7 mg per vegan liquid phyto- cap® <i>Vegan, Dairy-Free, Gluten-Free, Soy- Free.</i>	1 vegan liquid phyto-cap® Proprietary Extract Blend [Organic Turmeric (<i>Curcuma longa</i>) root extract, Turmeric (<i>Curcuma longa</i>) root extract, Turmeric (<i>Curcuma longa</i>) root supercritical CO₂ extract [Curcuminoids 36 mg]] 482 mg Additional Information 1 vegan liquid phyto-cap® Proprietary Extract Blend [Organic Turmeric (<i>Curcuma longa</i>) root extract, Turmeric (<i>Curcuma longa</i>) root extract, Turmeric (<i>Curcuma longa</i>) root supercritical CO₂ extract [Curcuminoids 36 mg]] 482 mg, Black Pepper (<i>Piper nigrum</i>) fruit supercritical CO₂ extract 7 mg. Other Ingredients: Organic soy lecithin, vegetable glycerin, water and vegan capsule (hypromellose, chlorophyll).

APPROVED GNC Herbal Plus® Turmeric Curcumin 500 mg   Dist. by General Nutrition Corporation	1 capsule 500 mg turmeric root extract 475 mg curcuminoids ✓ [Found 478 mg curcuminoids and 424 mg curcumin]	Take one capsule daily. Large capsule	\$0.40/capsule [\$0.42] \$39.99/100 capsules	No Sugar, No Artificial Colors, No Artificial Flavors, Sodium Free, No Wheat, Gluten Free, No Soy, No Dairy, Yeast Free.	1 capsule Turmeric Root Extract (<i>Curcuma longa</i>) (95% Curcuminoids = 475 mg) 500 mg. Other Ingredients: Vegetable Cellulose Capsule, Cellulose.
APPROVED Integrative Therapeutics® Theracurmin® HP  Dist. by Integrative Therapeutics, LLC	2 capsules 600 mg Theracurmin® extract 180 mg curcuminoids ✓ [Found 269.6 mg curcuminoids and 246 mg curcumin]	Adults take 2 capsules daily or as recommended by a healthcare professional. Large capsule	\$1.87/2 capsules [\$3.46] \$56.00/60 capsules	Vegan. Contains no salt, wheat, gluten, soy, dairy, or artificial colors.	2 capsules Total Carbohydrate <1 g, Theracurmin® [enhanced bioavailable water-dispersible curcumin extract from <i>Curcuma longa</i> rhizome] 600 mg. Other Ingredients: Cellulose, maltose, plant-derived capsule (hypromellose), gum ghatti Additional Information 2 capsules Total Carbohydrate <1 g, Theracurmin® [enhanced bioavailable water-dispersible curcumin extract from <i>Curcuma longa</i> rhizome] 600 mg. Other Ingredients: Cellulose, maltose, plant-derived capsule (hypromellose), gum ghatti, maltodextrin, ascorbyl palmitate, citric acid, silica.

➤ APPROVED ➤ ➤ Top Pick ➤ for supplements Kirkland Signature® [Costco] Turmeric 1,000 mg  Dist. by Costco Wholesale Corporation	2 vegetarian capsules 1,000 mg turmeric extract 950 mg curcuminoids ✓ [Found 960 mg curcuminoids and 742 mg curcumin]	Adults, take two (2) capsules daily, with a meal. Large vegetarian capsule	\$0.28/2 vegetarian capsules [\$0.15] \$33.99/240 vegetarian capsules	Black pepper fruit extract 10 mg per 2 vegetarian capsules <i>USP Dietary Supplement Verified® seal. No Artificial Flavors. No Preservatives. No Synthetic Dyes. No Starch or Gluten.</i>	2 vegetarian capsules Turmeric (<i>Curcuma longa</i>) root extract (Standardized to 95% curcuminoids, 950 mg) 1,000 mg, Black Pepper (<i>Piper nigrum</i>) fruit extract (Standardized to 95% piperine, 9.5 mg) 10 mg. Other Ingredients: Microcrystalline Cellulose, Hypromellose Additional Information 2 vegetarian capsules Turmeric (<i>Curcuma longa</i>) root extract (Standardized to 95% curcuminoids, 950 mg) 1,000 mg, Black Pepper (<i>Piper nigrum</i>) fruit extract (Standardized to 95% piperine, 9.5 mg) 10 mg. Other Ingredients: Microcrystalline Cellulose, Hypromellose, Magnesium Stearate, Silicon Dioxide, Stearic Acid.
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APPROVED Life Extension® Curcumin Elite™  Dist. by Quality Supplements and Vitamins, Inc.	1 vegetarian capsule 500 mg Curcumin Elite™ proprietary CGM blend 200 mg curcuminoids ✓ [Found 231.3 mg curcuminoids and 191 mg curcumin]	Take one (1) capsule daily, or as recommended by a healthcare practitioner. Large vegetarian capsule	\$0.29/vegetarian capsule [\$0.63] \$17.45/60 vegetarian capsules	<i>Non GMO. Gluten Free.</i>	1 vegetarian capsule Curcumin Elite™ Proprietary CGM Blend [providing 40% curcuminoids (200 mg) and 3% turmerones (15 mg) [from turmeric (rhizome), 30% galactomannans (150 mg) [from fenugreek (seed)]] 500 mg. Other Ingredients: Microcrystalline cellulose Additional Information 1 vegetarian capsule Curcumin Elite™ Proprietary CGM Blend [providing 40% curcuminoids (200 mg) and 3% turmerones (15 mg) [from turmeric (rhizome), 30% galactomannans (150 mg) [from fenugreek (seed)]] 500 mg. Other Ingredients: Microcrystalline cellulose, vegetable cellulose (capsule), vegetable stearate, silica.
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UNABLE TO APPROVE New Chapter® Zyflamend™  Dist. by New Chapter, Inc.	2 vegetarian capsules 110 mg turmeric extract Unlisted curcuminoids (Found only 14.6 mg curcuminoids, a very small dose and lower than what one might expect from a turmeric extract, and 12.9 mg curcumin)	Two Capsules Daily With Food. Do Not Exceed Suggested Use. Not Recommended For Use In Children. Large vegetarian capsule <u>Heavy Metals:</u> Lead: 0.07 mcg (0.04 mcg/g) Additional Information Two Capsules Daily With Food. Do Not Exceed Suggested Use. Not Recommended For Use In Children. Large vegetarian capsule <u>Heavy Metals:</u> Lead: 0.07 mcg (0.04 mcg/g) Cadmium: <0.02 mcg (0.08 mcg/g) Mercury: 0.003 mcg (0.002 mcg/g)	\$0.64/2 vegetarian capsules [\$22.09] \$58.04/180 vegetarian capsule	Rosemary 150 mg, ginger extract 100 mg, holy basil 100 mg, organic green tea 100 mg, Hu Zhang 80 mg, Chinese goldthread 40 mg, barberry 40 mg, organic oregano 40 mg & Chinese skullcap 20 mg per 2 vegetarian capsules Additional Information Rosemary 150 mg, ginger extract 100 mg, holy basil 100 mg, organic green tea 100 mg, Hu Zhang 80 mg, Chinese goldthread 40 mg, barberry 40 mg, organic oregano 40 mg & Chinese skullcap 20 mg per 2 vegetarian capsules Non GMO Project Verified seal. NSF Certified Gluten-Free seal. 100% vegetarian; no artificial flavors or colors.	2 vegetarian capsules Rosemary (<i>Rosmarinus officinalis</i>) (leaf) [100 mg supercritical extract and 50 mg hydroethanolic extract] 150 mg, Turmeric (<i>Curcuma longa</i>) (rhizome) (100 mg aqueous extract Additional Information 2 vegetarian capsules Rosemary (<i>Rosmarinus officinalis</i>) (leaf) [100 mg supercritical extract and 50 mg hydroethanolic extract] 150 mg, Turmeric (<i>Curcuma longa</i>) (rhizome) (100 mg aqueous extract and 10 mg organic supercritical extract) 110 mg, Ginger (<i>Zingiber officinale</i>) (rhizome) [54 mg organic supercritical extract and 46 mg aqueous extract] 100 mg, Holy Basil (<i>Ocimum sanctum</i>) (leaf) [hydroethanolic extract] 100 mg, Organic Green Tea (<i>Camellia sinensis</i>) (leaf) [aqueous extract] 100 mg, Hu Zhang (<i>Polygonum cuspidatum</i>) (root and rhizome) [hydroethanolic extract] 80 mg, Chinese Goldthread (<i>Coptis chinensis</i>) (rhizome) [aqueous extract] 40 mg, Barberry (<i>Berberis vulgaris</i>) (root bark) [hydroethanolic extract] 40 mg, Organic Oregano (<i>Origanum vulgare</i>) (leaf) [supercritical extract] 40 mg, Chinese Skullcap (<i>Scutellaria biacalensis</i>) (root) [aqueous extract] 20 mg. Other Ingredients: Extra-virgin olive oil, hypromellose (capsule), candelilla wax and organic yellow beeswax.
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➤ APPROVED ➤ Top Pick ➤ for supplement if avoiding black pepper Puritan's Pride Curcuminoids from Turmeric  Mfd. by Puritan's Pride, Inc.	1 capsule 538 mg turmeric extract 500.3 mg curcuminoids ✓ [Found 528 mg curcuminoids and 434 mg curcumin]	For adults, take one (1) capsule daily, preferably with a meal. Large capsule	\$0.22/capsule [\$0.21] \$38.98/six bottles of 30 capsules (180 capsules total)	No Artificial Color, Flavor or Sweetener, No Sugar, No Milk, No Lactose, No Soy, No Gluten, No Wheat, No Yeast, No Fish, Sodium Free.	1 capsule Turmeric Extract (<i>Curcuma longa</i>) (root) (Standardized to contain 93% Curcuminoids, 500 mg) 538 mg. Other Ingredients: Gelatin, Vegetable Cellulose, Vegetable Magnesium Stearate, Silica.
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APPROVED Qunol® Extra Strength Turmeric  Dist. by Quten Research Institute, LLC	2 vegetarian capsules 1,000 mg bioenhanced turmeric complex 180 to 220 mg curcuminoids ✓ [Found 225.1 mg curcuminoids and 184.8 mg curcumin]	Adults take two (2) vegetarian capsules daily with or after a meal, or as directed by your healthcare professional. Large vegetarian capsule	\$0.47/2 vegetarian capsules [\$1.04] \$27.97/120 vegetarian capsules	<i>Hydro-Soluble Technology. Free Of: Milk or milk by-products, egg or egg by-products, fish or fish by-products, shellfish or shellfish by-products, tree nuts, wheat or wheat by-products, peanuts or peanuts by-products, and soybean or soy by-products</i> <i>Additional Information</i> <i>Hydro-Soluble Technology. Free Of: Milk or milk by-products, egg or egg by-products, fish or fish by-products, shellfish or shellfish by-products, tree nuts, wheat or wheat by-products, peanuts or peanuts by-products, and soybean or soy by-products.</i> Precaution: <i>Allergens: Manufactured in a facility that processes egg, wheat, milk, soy, tree nuts, peanuts, fish and shellfish.</i>	2 vegetarian capsules Bioenhanced Turmeric Complex (Curcuma Longa) Rhizome (18%-22% Curcuminoids) 1,000 mg. Other Ingredients: Gamma-cyclodextrin, vegetable hypromellose Additional Information 2 vegetarian capsules Bioenhanced Turmeric Complex (Curcuma Longa) Rhizome (18%-22% Curcuminoids) 1,000 mg. Other Ingredients: Gamma-cyclodextrin, vegetable hypromellose, oleoresin turmeric, magnesium stearate, gellan gum and silicon dioxide.
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APPROVED Root2® Turmeric Extract Curcumin C3 Complex®  Dist. by Vitacost.com, Inc.	2 capsules 1,160 mg Curcumin C³ Complex® 1,102 mg curcuminoids ✓ [Found 1,056 mg curcuminoids and 846 mg curcumin]	Take 2 Capsules With Food Or As Directed By A Healthcare Professional. Large capsule	\$0.50/2 capsules [\$0.24] \$14.99/60 capsules	Black pepper extract 5 mg per 2 capsules Free of: Eggs, Peanuts, Tree Nuts, Crustacean Shellfish, Fish, Soy, Gluten, Titanium Dioxide.	2 capsules Turmeric Extract (rhizome) [standardized to 95% curcuminoids (1,102 mg) Curcumin C³ Complex®] 1,160 mg, Black Pepper Extract (fruit) [standardized to 95% piperine (4.75 mg) BioPerine®] 5 mg. Other Ingredients: Hydroxypropyl Methylcellulose Additional Information 2 capsules Turmeric Extract (rhizome) [standardized to 95% curcuminoids (1,102 mg) Curcumin C³ Complex®] 1,160 mg, Black Pepper Extract (fruit) [standardized to 95% piperine (4.75 mg) BioPerine®] 5 mg. Other Ingredients: Hydroxypropyl Methylcellulose, Rice Flour, Vegetable Magnesium Stearate, Silicon Dioxide And Vegetable Stearic Acid.
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APPROVED Spring Valley™ [Walmart] Turmeric Curcumin Extract - Natural Peach Mango Flavor  Dist. by Walmart Inc.	2 vegetarian gummies 200 mg Longvida® turmeric extract 36 mg to 44 mg curcuminoids ✓ [Found 42.3 mg curcuminoids and 36 mg curcumin]	Adults, chew two to four gummies daily. Chew completely before swallowing. Medium/large gumdrop shaped vegetarian gummy <i>The drop-shaped gummies have a mild, slightly sweet peach taste. Each gummy has 1 gram of added sugar.</i>	\$0.33/2 vegetarian gummies [\$3.93] \$9.98/60 vegetarian gummies	<i>Non GMO Project Verified seal. No Gluten, Yeast, Wheat, Milk, Egg, Artificial Flavors, Soy, Added Preservatives, Artificial Sweeteners, High Fructose Corn Syrup.</i>	2 vegetarian gummies Calories 15, Total Carbohydrate 4 g, Total Sugars [Includes Added Sugars 2 g] 2 g, Sodium 5 mg, Longvida® Turmeric (<i>Curcuma longa</i>) Root Extract 200 mg. Other Ingredients: Organic Tapioca Syrup Additional Information 2 vegetarian gummies Calories 15, Total Carbohydrate 4 g, Total Sugars [Includes Added Sugars 2 g] 2 g, Sodium 5 mg, Longvida® Turmeric (<i>Curcuma longa</i>) Root Extract 200 mg. Other Ingredients: Organic Tapioca Syrup, Organic Sugar, Pectin, Citric Acid, Sodium Citrate, Natural Flavors, Organic Sunflower Oil, Organic Carnauba Wax.
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APPROVED Terry Naturally® CuraMed®  Dist. by EuroPharma, Inc.	1 softgel 750 mg proprietary complex (BCM-95®/Curcugreen®) 500 mg curcuminoids ✓ [Found 488 mg curcuminoids and 401 mg curcumin]	1 softgel daily. Large softgel	\$0.84/softgel [\$0.86] \$50.36/60 softgels	Non-GMO. Halal. No sugar, salt, yeast, wheat, gluten, corn, soy, dairy products, artificial coloring, artificial flavoring, or artificial preservatives. Precaution: Color variations are normal.	1 softgel Calories 10, Total Fat 0.5 g, Total Carbohydrate 1 g, Proprietary Complex [Curcumin (<i>Curcuma longa</i>) Rhizome Extract (BCM-95®/Curcugreen®) enhanced with turmeric essential oil and standardized for curcuminoid complex Additional Information 1 softgel Calories 10, Total Fat 0.5 g, Total Carbohydrate 1 g, Proprietary Complex [Curcumin (<i>Curcuma longa</i>) Rhizome Extract (BCM-95®/Curcugreen®) enhanced with turmeric essential oil and standardized for curcuminoid complex (curcumin, demethoxycurcumin and bisdemethoxycurcumin), phospholipids (from sunflower lecithin), supplying 500 mg of pure curcuminoids] 750 mg. Other Ingredients: Medium chain triglycerides, gelatin, glycerin, beeswax, purified water, turmeric in sunflower oil (softgel color), silica.
Root Powder with Extract:					

APPROVED Garden of Life® My Kind Organic Extra Strength Turmeric   Dist. by Garden of Life LLC	1 vegan tablet 553 mg organic turmeric blend 100 mg curcuminoids ✓ [Found 108.6 mg curcuminoids and 91.1 mg curcumin] Also tested for disintegration	Adults take 1 tablet daily. Not intended for children. Large vegan tablet <u>Heavy Metals:</u> Lead: 0.05 mcg (0.03 mcg/g) Cadmium: 0.03 mcg (0.03 mcg/g) Arsenic: <0.02 mcg Mercury: 0.002 mcg (0.001 mcg/g)	\$0.38/vegan tablet [\$1.77] \$23.09/60 vegan tablets	<i>USDA Organic seal. Non GMO Project Verified seal. Kosher. No artificial colors or preservatives.</i> Precaution: Made without dairy or soy ingredients, peanut, tree nuts or shellfish. Manufactured in a facility that also processes soy, dairy, peanut, tree nuts and shellfish.	1 vegan tablet Organic Turmeric Blend [Organic Turmeric Root Extract standardized to 95% curcuminoids, Organic Fermented Turmeric Root (blend yielding 100 mg curcuminoids)] 553 mg, Organic Fermented Ginger Root 50 mg, Organic Black Pepper Fruit Extract 7 mg, Probiotic Blend Additional Information 1 vegan tablet Organic Turmeric Blend [Organic Turmeric Root Extract standardized to 95% curcuminoids, Organic Fermented Turmeric Root (blend yielding 100 mg curcuminoids)] 553 mg, Organic Fermented Ginger Root 50 mg, Organic Black Pepper Fruit Extract 7 mg, Probiotic Blend [<i>Bifidobacterium lactis</i> BI-04, <i>Lactobacillus acidophilus</i> La-14] 4 mg. Other Ingredients: Clean Tablet Technology™ Blend (patent pending): Organic Gum Arabic, Organic Dextrose, Organic Coating (Organic Sunflower Lecithin, Organic Tapioca Maltodextrin, Organic Palm Oil, Organic Guar Gum).
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NOT APPROVED Jamieson™ Curcumin Turmeric 550 mg  Dist. by Jamieson Laboratories	1 vegetarian capsule 50 mg turmeric extract and 500 mg turmeric powder 47.5 mg (extract) and 15 mg (powder) curcuminoids ✓ [Found 56.7 mg curcuminoids and 45.4 mg curcumin]	Adults: Take 1 capsule daily. Large vegetarian capsule <u>Heavy Metals:</u> Lead: 1.1 mcg (1.5 mcg/g) Cadmium: 0.04 mcg (0.05 mcg/g) Arsenic: 0.08 mcg (0.11 mcg/g) Mercury: 0.002 mcg (0.003 mcg/g)	\$0.40/vegetarian capsule [\$3.51] \$23.88/60 vegetarian capsules	<i>Vegetarian.</i>	1 vegetarian capsule Turmeric (<i>Curcuma longa</i>, rhizome) 500 mg, Turmeric (50:1) extract (<i>Curcuma longa</i>, rhizome) [Equivalent to 2,500 mg of raw herb, standardized to 95% curcuminoids] 50 mg. Also contains: Cellulose, water-soluble cellulose Additional Information 1 vegetarian capsule Turmeric (<i>Curcuma longa</i>, rhizome) 500 mg, Turmeric (50:1) extract (<i>Curcuma longa</i>, rhizome) [Equivalent to 2,500 mg of raw herb, standardized to 95% curcuminoids] 50 mg. Also contains: Cellulose, water-soluble cellulose, vegetable magnesium stearate, silica.
Pet Product:					

➤ APPROVED ➤ Top Pick ➤ for dogs Zesty Paws® Turmeric Curcumin Bites™  Dist. by Zesty Paws®	1 soft chew 400 mg Qmin+™ curcumin rhizome extract and 400 mg organic turmeric powder 190 mg (extract) and 12 mg (powder) curcuminoids ✓ [Found 191 mg curcuminoids and 154 mg curcumin]	Begin with half the suggested amount, and gradually increase to the suggested daily amount. Amounts can be split between AM and PM. Up to 25 lbs - 1 Soft Chew; 26-75 lbs - 2 Soft Chews; Over 75 lbs - 3 Soft Chews. Large heart shaped soft chews <u>Heavy Metals:</u> In 1/2 to 3 soft chews Additional Information Begin with half the suggested amount, and gradually increase to the suggested daily amount. Amounts can be split between AM and PM. Up to 25 lbs - 1 Soft Chew; 26-75 lbs - 2 Soft Chews; Over 75 lbs - 3 Soft Chews. Large heart shaped soft chews <u>Heavy Metals:</u> In 1/2 to 3 soft chews:	\$0.32/soft chew [\$0.84] \$28.97/90 soft chews	Coconut oil 420 mg & BioPerine® 5 mg per soft chew <i>National Animal Supplement Council [NASC] Quality Seal. No Grain, Corn, or Soy Derivatives. No Artificial Flavors or Preservatives, No Synthetic Colors.</i> Made in the USA from US and Globally Sourced Ingredients.	1 soft chew Coconut Oil 420 mg, Organic Turmeric 400 mg, Qmin+™ Curcumin (<i>Curcuma longa</i>) Rhizome Extract (Minimum 95% Curcuminoids) 200 mg, BioPerine® (<i>Piper nigrum</i>) (Fruit) (Standardized to Minimum 95% Piperine) 5 mg. Inactive Ingredients: Coconut Glycerin, Flaxseed, Garbanzo Flour Additional Information 1 soft chew Coconut Oil 420 mg, Organic Turmeric 400 mg, Qmin+™ Curcumin (<i>Curcuma longa</i>) Rhizome Extract (Minimum 95% Curcuminoids) 200 mg, BioPerine® (<i>Piper nigrum</i>) (Fruit) (Standardized to Minimum 95% Piperine) 5 mg. Inactive Ingredients: Coconut Glycerin, Flaxseed, Garbanzo Flour, Mixed Tocopherols, Natural Duck Flavoring, Natural Flavors (from Oregano, Flaxseed and Plums), Palm Fruit Oil, Pea Flour, Powdered Cellulose, Rosemary Extract, Sunflower Lecithin, Tapioca Flour.
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8/21/25, 9:53 AM		Turmeric and Curcumin Supplement and Spices Reviews & Top Picks - ConsumerLab.com		
		Lead: 0.07 mcg to 0.39 mcg (0.03 mcg/g) Cadmium: 0.12 mcg to 0.74 mcg (0.06 mcg/g) Arsenic: <0.02 mcg to <0.12 mcg Mercury: 0.002 mcg to 0.01 mcg (0.001 mcg/g)		
Unless otherwise noted, information about the products listed above is based on the samples purchased by ConsumerLab.com (CL) for this Product Review. The samples are from a single lot of the respective product. Be aware that there may lot-to-lot variation in products, particularly natural products. Manufacturers may change ingredients and label information at any time, so be sure to check labels carefully when evaluating the product you use or buy as it may be different from the product we tested. Manufacturers may also change ingredient suppliers, which can affect product quality. Pricing can change over time and vary based on retailer, promotions, and other factors. The information contained in this report is based on the compilation and review of information from product labeling and analytic testing. CL applies what it believes to be the most appropriate testing methods and standards. The information in this report does not reflect the opinion or recommendation of CL, its officers or employees. CL cannot assure the accuracy of information.				
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Results of ConsumerLab.com Testing of Turmeric Spices				
(Price Checks are not included in printed reviews)				
Approval Status Product Name	Type of Turmeric	Curcuminoids Found Heavy Metals	Notable Features	Cost Per Ounce of Ground Turmeric [Price Per 500 mg Curcuminoids Found] Price
➤ APPROVED ⬅ Frontier® Co-Op Turmeric Root  Dist. by Frontier Co-Op	Ground, organic	33.4 mg per 1/2 level tsp (17.2 mg curcumin) (weighing 0.9 g) (3.6% wt/wt ✓) <u>Heavy Metals:</u> Lead: 0.24 mcg/g Cadmium: 0.07 mcg/g Arsenic: 0.04 mcg/g Mercury: 0.002 mcg/g	<i>Non GMO Project Verified seal. USDA Organic seal. Fair Trade Certified seal. Kosher. Non-ETO. Non-Irradiated. Organic.</i>	\$3.32/oz [\$1.64] \$4.68/1.41 oz [40 g] glass jar

➤ APPROVED ➤ Top Pick ➤ for spices Great Value™ Ground Turmeric  Dist. by Wal-Mart Stores, Inc.	Ground, organic	33.8 mg per 1/2 level tsp (21.6 mg curcumin) (weighing 1.2 g) (2.9% wt/wt ✓) Heavy Metals: Lead: 0.07 mcg/g Cadmium: 0.02 mcg/g Arsenic: 0.02 mcg/g Mercury: 0.002 mcg/g	Kosher. Organic.	\$2.21/oz [\$1.33] \$3.97/1.8 oz [51 g] glass jar
➤ APPROVED ➤ McCormick® Ground Turmeric  Dist. by McCormick & Co., Inc.	Ground	36.2 mg per 1/2 level tsp (17.2 mg curcumin) (weighing 1 g) (3.6% wt/wt ✓) Heavy Metals: Lead: 0.3 mcg/g Cadmium: 0.03 mcg/g Arsenic: 0.07 mcg/g Mercury: 0.003 mcg/g	Kosher. Non GMO.	\$5.25/oz [\$2.64] \$4.99/0.95 oz [26 g] plastic jar
Unless otherwise noted, information about the products listed above is based on the samples purchased by ConsumerLab.com (CL) for this Product Review. The samples are from a single lot of the respective product. Be aware that there may lot-to-lot variation in products, particularly natural products. Manufacturers may change ingredients and label information at any time, so be sure to check labels carefully when evaluating the product you use or buy as it may be different from the product we tested. Manufacturers may also change ingredient suppliers, which can affect product quality. Pricing can change over time and vary based on retailer, promotions, and other factors. The information contained in this report is based on the compilation and review of information from product labeling and analytic testing. CL applies what it believes to be the most appropriate testing methods and standards. The information in this report does not reflect the opinion or recommendation of CL, its officers or employees. CL cannot assure the accuracy of information. Copyright ConsumerLab.com, LLC, 2025 All rights reserved. Not to be reproduced, excerpted, or cited in any fashion without the express written permission of ConsumerLab.com LLC				

Products tested in 2023 and 2025

ConsumerTips™:

Consumers should look for the following information on **turmeric supplement** labels:

- Species of turmeric (look for *Curcuma longa*, although the use of the accepted common name "turmeric" is sufficient to denote this species)
- Part of the plant used (should be "root" or "rhizome")
- Form of turmeric used (e.g., root/rhizome powder or extract)
- Amount of turmeric per pill or dose in grams (g) or milligrams (mg) [1 gram = 1,000 milligrams]

The FDA requires all of the above information to appear on labels. While it is preferable that the concentration of curcumin also be indicated, optimal doses of curcumin have not yet been established.

You may notice slight variation in the orange-yellow color of curcumin or turmeric from product-to-product and even from lot-to-lot for a specific product. This is not necessarily a problem. What is most important is whether or not the product provides the correct amount of curcuminoid compounds (as discussed above in ["What CL Found"](#)). Reasons for color variation include how the root powder or extract is prepared (even roots used to make root powders are typically briefly boiled to help "set" the turmeric), seasonal and climatic variations in the regions from which the root is sourced, and a change in the ingredient supplier used by a manufacturer.

Clinical studies with turmeric root powder have generally used 3 to 12 grams (3,000 mg to 12,000 mg) daily. However, the bulky volume of more than 8 grams per day may be unacceptable to some people. [Appropriate doses](#) depend on the form and concentration of turmeric used in the supplement.

The best way to take curcumin and turmeric supplements:

The best way to take a curcumin or turmeric supplement is to take it twice a day because it has a half-life of just a couple of hours and, each time, to take it with a meal that contains some fat or oil. The reason to take it with a fat-containing meal is that (as discussed in the [Absorption and Bioavailability](#) section below) standard curcumin has low bioavailability and only a small percentage of the curcumin (if not bioavailability enhanced) will be absorbed. Most [clinical studies](#) of curcumin and turmeric use twice-daily dosing.

Even products that contain bioavailability-enhanced formulations of curcumin are probably best taken twice daily and with a fatty meal to further boost absorption.

Be aware that you'll absorb little curcumin if adding turmeric or curcumin to tea or to a fruit or vegetable smoothie containing little fat. Adding whole or reduced-fat milk or yogurt, or vegetable/seed oils, will provide fats that can enhance curcumin absorption.

Cooking with turmeric:

Diets high in the **spice turmeric** will contain about 60 to 100 mg of curcumin per day, although doses used therapeutically are typically several times higher than this. If you are **cooking with turmeric spice**, be aware that some curcumin may be lost due to heat or chemical changes during cooking. An experiment in which 1 gram of turmeric (providing 33 mg of curcumin) was added to bread, an oat bar, or soup prior to baking or cooking found that each contained, respectively, just 52%, 48%, or 71% of the original curcumin after being made ([Mahale, Mol Nutr Food Res 2018](#)). (Note: [Adding black pepper](#) to turmeric-containing foods can increase the bioavailability of the curcumin and, as noted earlier, consuming such foods with as part of a fat-containing meal will help to increase curcumin absorption.)

Turmeric powder vs. freshly grated turmeric

A small study found that, when mixed into a high-fat meal (mashed potatoes with cream providing 40 grams of fat), the curcuminoids in turmeric powder (12 grams) were about twice as bioavailable as those from freshly grated turmeric (83 grams). Interestingly, both forms of turmeric raised levels of curcuminoids in the blood far more than curcumin powder (500 mg -- 95% curcuminoids) mixed into

the same meal, despite all three products containing the same amount of curcumin. The researchers speculated that compounds naturally in turmeric but not in curcumin powder, such as oils or starches, naturally enhance the absorption of curcuminoids ([Nasef, Food Funct 2019](#)).

Getting curcumin from turmeric tea?

The amount of curcumin that you get from turmeric-containing tea in a tea bag is negligible. Examples of such teas are *Yogi Sweet Ginger Citrus Turmeric Vitality Tea*, *Traditional Medicinals Organic Turmeric with Meadowsweet & Ginger Tea*, and *Swanson 100% Organic Turmeric Tea*, which contain turmeric powder — usually about 750 to 1,000 mg per tea bag. The amount of curcumin expected to be in that amount of powder is only about 11 mg to 15 mg. Furthermore, as much as 99% of that curcumin may be filtered out of the tea by the bag, leaving less than 1 mg of curcumin in the drinkable tea, as suggested by an experiment by researchers in Turkey ([Isik, World Academy of Science, Engineering and Technology Conference 2018](#)). That won't happen if the powder is added directly to the tea (i.e., no filter) or to a smoothie, but keep in mind that very little curcumin will be absorbed if the tea or smoothie contains little fat or is not consumed with a fat-containing meal. Adding whole or reduced-fat milk or yogurt, or vegetable/seed oils, will provide fats that can enhance curcumin absorption.

Dosage used

- To treat **dyspepsia**, one study used 500 mg turmeric powder four times daily (2 grams per day of turmeric) for seven days ([Thamlikitkul, J Med Assoc Thai 1989](#)).
- For **ulcerative colitis**, 1.5 grams of curcumin was used twice a day (3 grams per day of curcumin) to attain remission in patients with active mild to moderate ulcerative colitis ([Lang, Clin Gastroenterol Hepatol 2015](#)). One gram of curcumin was used twice a day to maintain remission (2 grams per day of curcumin) ([Hanai, Clin Gastroenterol Hepatol 2006](#)).
- For **ulcerative proctitis** 550 mg of curcumin was used twice daily for 1 month and then 550 mg three times daily for another month ([Holt, Digestive Diseases and Sciences 2005](#)).
- For **chronic anterior uveitis**, 375 mg of curcumin three times a day (1.1 grams per day of curcumin) was used in a three-month study ([Lal, Phytother Res 1999](#)).
- For **rheumatoid arthritis**, 1,200 mg per day ([Deodhar, Indian J Med Res, 1980](#)) or 500 mg twice daily of a specific curcumin product (BCM-95, Biocurcumin) ([Chandran, Phytother Res 2012](#)).
- For **osteoarthritis of the knee**, 1,500 mg daily of curcuminoids taken for six weeks as a capsule with 500 mg of curcuminoids as C3 complex® including 5 mg of Bioperine® three times a day ([Panahi, Phytother Res 2014](#)). Also as three capsules daily of 500 mg of BCM-95 (each providing 333 mg of curcuminoids) ([Haroyan, BMC Compl Alt Med 2018](#)).
- For **seasonal allergy**, 500 mg of curcumin daily for 8 weeks ([Wu, Ann Allergy Asthma Immunol 2016](#)).
- For **reducing delayed-onset muscle soreness after exercise**, 200 mg of curcumin (from 1 gram of [Meriva®](#)) at breakfast and dinner for two days prior to exercise and the day of exercise, and one day after exercise ([Drobnic, JISSN 2014](#)).
- For treating **psoriasis**, a curcuminoid C3 complex containing 95% curcuminoids has been given as three 500 mg capsules three times daily (4.5 grams per day) ([Kurd, J Am Acad Dermatol, 2008](#)).
- For preventing early changes in the colon that might lead to **colon cancer**, 4 grams of micronized 98% curcumin daily reduced the number of crypt foci in a one-month study in smokers. A 2-gram dose was not effective. ([Carroll, Cancer Prev Res Phila 2011](#)).
- For treating **pancreatic cancer**, 8 grams of curcumin have been given daily ([Dhillon, Clin Cancer Res 2008](#)).

- For preventing the progression of prediabetes to **diabetes**, 1.5 grams of curcuminoids in two divided doses has been given daily in a 9-month study ([Chuengsamarn, Diabetes Care 2012](#)).
- For improving symptoms of **major depression**, curcumin (500 mg of BCM-95) twice daily may reduce depressive symptoms, particularly among individuals with atypical depression ([Lopresti, J Affect Disorders 2014](#)).
- For improving **short-term memory**, 1 gram of turmeric powder taken with breakfast ([Lee, Asia Pac J Nutr 2014](#)). Also, to improve some aspects of **cognitive function and fatigue**, 400 mg after breakfast of a patented curcumin formula containing 80 mg curcumin plus fats to enhance absorption (Longvida® Optimized Curcumin) ([Cox, J Psychopharm 2014](#)).

Some products contain a patented Curcumin C3 Complex which, [according to its manufacturer](#), Sabinsa Corporation, is standardized to 95% curcuminoids. In this Review, it is used in *Root2 Turmeric Extract Curcumin C3 Complex*.

Based on ConsumerLab.com's analyses of the products in this report, curcumin accounted for approximately 70% of total curcuminoids in concentrated extracts (such as those standardized to 95% curcuminoids) and approximately 56% of total curcuminoids in products made from only root powder.

Absorption and Bioavailability

If taken with just water, only a limited percentage of curcumin taken orally will be absorbed into the blood because much of what is ingested is metabolized in the intestine and/or excreted in the stool. In addition, unformulated curcumin has a short half-life (the amount of time it takes for blood levels to fall by half) of two hours or less ([Suresh, CrystEngComm 2018](#)). As curcumin is lipophilic (it binds to fats), taking curcumin with foods containing fats or oils will enhance absorption as they stimulate the product of bile, which, in turn, aids the absorption of fats and lipophilic compounds like curcumin.

Bioavailability-Enhanced Formulations

Due to its poor natural bioavailability, a variety of special formulations have been developed to improve the absorption, half-life, and bioavailability of curcumin when taken with only water. Any product labeled as containing one of these formulations is specially marked in the second column of the [Results table](#) above.

Many small studies have compared the bioavailability of these special formulations to determine how much curcumin, or it and its metabolites (*total* curcuminoids), make it into the blood over time. Due to differences in how the studies were conducted, it is difficult to compare results across studies. However, a common finding in these studies is that **the formulation with the greatest bioavailability for both curcumin and/or total curcuminoids has tended to be NovaSol**.

An independent analysis in 2018 of bioavailability studies that had been conducted (the majority of which appeared to involve developers or manufacturers of the studied formulations) concluded that, **compared to the bioavailability of unformulated curcumin, NovaSol had the highest bioavailability (185 X that of unformulated curcumin), followed by Curcuwin (136 X), Longvida (100 X), Meriva (48 X), BCM-95 (27 X), Curcumin C3 Complex+Bioperine (20 X), and then Theracurmin (16 X)**, based, apparently, on measurements of curcumin in the blood ([Jamwal, J Integr Med 2018](#)). A caveat to this analysis is that results for certain products (*Meriva, NovaSol, Curcuwin, and Theracurmin*) were inflated by including conjugated forms of curcumin that may not be active in the body, as opposed to results for other products (*LongVida, CurQfen, BCM-95, and Curcumin C3 Complex*) that only counted the free, active form of curcumin. Nevertheless, products that have demonstrated greater bioavailability based on measured *free* curcumin have not always demonstrated greater clinical benefit (for example, LongVida does not seem to [reduce muscle soreness](#) after exercise or provide [long-term cognitive benefit](#)), while other products that evaluated bioavailability by measuring free and conjugated curcumin have shown benefit (e.g., Meriva has shown some benefit for [reducing muscle soreness](#), [attenuating spikes in blood sugar](#) after eating, [decreasing cholesterol](#), and other uses).

A subsequent clinical study in which a small number of men and women were given each of several formulations over time (taken with only water and on an empty stomach) found that **the formulations that most increased curcumin bioavailability were those that increased the water solubility of curcumin as well as its incorporation into micelles** (tiny fat droplets absorbed through the intestine).

Two formulations that were shown to do this were micellar curcumin (*NovaSOL*) and gamma-cyclodextrin curcumin (*Cavacurmin*), which respectively, had 57-fold and 30-fold greater bioavailability of curcumin compared to unformulated curcumin. Both of these formulations also improved curcumin stability during simulated gastric and intestinal digestion. On the other hand, formulations that prevented the metabolism of curcumin (i.e., one with piperine) and those that increased curcumin solubility in water but *not* its stability during digestion or its incorporation into micelles (including *BCM-95*, *Longvida*, *Meriva* and *Theracurmin*) did *not* significantly improve curcumin bioavailability compared to unformulated curcumin ([Flory, Mol Nutr Food Res 2021](#)).

Another comparison study of special formulations — all taken only with 8 oz. of water on an empty stomach — also found that *NovaSOL* had the highest bioavailability for total curcuminoids, followed by **Turmipure GOLD** (from Naturex), *Naturex* standard extract, *C3 Complex*, and finally, *Meriva*. However, when looking specifically at the bioavailability of *only curcumin*, the main curcuminoid compound, there were *no significant differences between formulations*. The study was funded by Naturex ([Fanca-Berthon, J Nutr 2021](#)). *Turmipure GOLD* is a dried colloidal suspension of standard turmeric extract, quillaja extract, sunflower oil, and acacia gum (1,500 mg total standardized to 30% curcumin, providing 90 mg of curcuminoids) and is sold as a powder to be mixed with water. It is not an ingredient in any of the products tested in this review, but is marketed in the U.S. by Wellness Resources.

Keep in mind that none of the comparison studies above involved taking supplements along with a high-fat meal — had they, it's possible that absorption rates across formulations would be more similar to one another as well as to unformulated curcumin. If you don't plan on taking your turmeric/curcumin supplement with a meal, it's probably worth taking a product formulated to enhance absorption, as you will, otherwise, naturally absorb only a small amount of curcuminoids.

More information about some of these formulations follows (listed alphabetically) follows. (See the [What It Does](#) section for information about how these have been used for specific therapeutic uses):

BCM-95 reconstitutes curcuminoids with other components of turmeric such as turmeric oils. A small study showed the bioavailability of BCM-95 to be about 7 times that of normal curcumin, and about 6 times that of a curcumin-lecithin-piperine complex ([Antony, Indian J Pharma Sciences 2008](#)). BCM-95 is found in products such as *Terry Naturally CuraMed* (tested in this Review) and others such as *Curcumin Extreme* and *Life Extension Super Bio-Curcumin*. BCM-95 is manufactured by Arjuna Natural Extracts, Inc. and distributed by DolCas Biotech in the U.S.

Bioperine® (Sabinsa Corporation) is a patented **black pepper extract** containing the compound piperine, which inhibits the metabolism of curcumin in the gut and liver ([Shoba, Planta Med 1998](#)). The piperine in *Bioperine* is claimed to have increased the bioavailability of curcumin by 20 times in people (based on giving 20 mg of piperine with a 2,000 mg dose of curcumin) and by 154% in rats — although both these figures are based on studies in which plain curcumin was given with just water, so hardly any was absorbed, *making the comparisons fairly meaningless*. You can also get a significant amount of piperine from regular ground black pepper — just 1/4 teaspoon of ground pepper (about 500 mg) should provide 10 to 35 mg of piperine, because black pepper is 2-7% piperine ([Gorgani, Compr Rev Food Sci Food Saf 2016](#)). In contrast, only about 2.5 to 5 mg of piperine is typically added to curcumin supplements — which normally contain a lot more curcumin than in foods spiced with turmeric.

Be aware that piperine may also significantly increase the bioavailability and blood levels of other compounds, including certain medications (See [Cautions and Concerns](#)). Black pepper extract and piperine are reported to have diuretic properties (increasing urine output) and stimulate the production of stomach acid ([Meghwal, Scientific Reports 2012](#)). One animal study found lower doses of both black pepper extract and piperine to have a laxative effect, while higher doses were found to slow intestinal motility and have an antidiarrheal effect — although in these studies both doses were significantly higher than amounts found in curcumin supplements ([Mehmood, J Med Food 2010](#)). In people, there do not appear to be any reported adverse effects when taken at typical doses; *Bioperine®* is self-affirmed GRAS (generally recognized as safe) ([FDA 2013](#)).

In this review, *Bioperine* is part of the **C3 complex** in the *Root2 Turmeric Extract Curcumin C3 Complex* and is included in *Zesty Paws Turmeric Curcumin Bites*.

Curcugen (Olene Life Sciences Pvt. Ltd.) is a standardized curcumin formulation described as "98.5% turmeric-derived" -- of which 50% is curcuminoids, and 1.5% is turmeric essential oils and turmeric polysaccharides, which are intended to improve dispersion and increase bioavailability. In a small company-funded study among healthy young men, Curcugen was found to be 31 times as bioavailable as a curcumin extract standardized to 95% curcuminoids, when each was taken on an empty stomach ([Panda, Medicine \(Baltimore\) 2021](#)). Curcugen is sold as an ingredient in *Wellness 26 CurcuOne with Curcugen*.

CurcuWin (OmniActive Health Technologies) combines curcumin with a **hydrophilic carrier**, making it more dispersible in water. A study funded by OmniActive found that CurcuWin increased curcuminoid levels in the blood plasma 4,490% above that achieved with standard curcumin and was estimated to have a half-life of six to seven hours ([Jager, Nutr J 2014](#)). The study also evaluated BCM-95 and Meriva, finding them, respectively, to increase total curcuminoid blood levels 30% and 690% above that with standard curcumin. In the study, the supplements were taken with water on an empty stomach, putting standard curcumin at a great disadvantage since its absorption is enhanced when taken with a fatty (oily) meal. CurcuWin is 20% curcuminoids, i.e., 250 mg of CurcuWin contains 50 mg of curcuminoids. One product in this review contains CurcuWin: *Allergy Research Group CurcuWin 500*. **CurcuWin Ultra+**, also by OmniActive, is a turmeric extract, which, like CurcuWin, is 20% curcuminoids, but is encapsulated (within a cellulose polymer, solubilizer, acidifier, and antioxidant matrix) to make it more water dispersible. In a study funded by OmniActive, a single, 250 mg dose of CurcuWin Ultra+ taken on an empty stomach with a glass of water increased total curcuminoid blood levels over 12 hours by 9,778% above levels achieved with a 1,900 mg dose standard curcumin. CurcuWin Ultra+ was also absorbed 40 times faster than regular curcumin ([Kothapally, Adv Ther 2023](#)). However, as discussed above, it's not clear how this formula would compare with standard curcumin if both were taken with a fatty meal. There do not appear to be any published studies comparing that absorption of CurcuWin and Curcuwin Ultra+.

CurQfen (Akay Group) combines curcumin with dietary fiber rich in galactomannans from fenugreek seed. In a study (funded by Akay Group) among 50 healthy adults (average age 33) who fasted overnight, 1,000 mg of CurQfen (providing 391 mg of curcuminoids) had 45.5-fold greater curcuminoid bioavailability than the same dose of unformulated curcumin (although that's not really saying much, since unformulated curcumin is hardly absorbed when not consumed with a fatty meal, and this enhancement is not as great as with some [other formulations](#)). Curcuminoids from CurQfen also were found in the blood for a longer period (3.7 hours vs less than one hour with unformulated curcumin) ([Kumar, J Funct Foods 2016](#)). CurQfen at 500 mg taken twice daily before a meal for three months did not adversely affect kidney function or liver function (as measured by blood levels of liver enzymes AST, ALT, ALP, GGT, and bilirubin) in a company-funded study among healthy adults ([Pancholi, Toxicol Rep 2021](#)). CurQfen is not found in any products tested in this review, but it is in products such as *CurQfen Curcumin/Fenugreek Complex* by Swanson (which is standardized to a minimum of 35% total curcuminoids), *Curcumin Ultra* by Advanced Orthomolecular Research, and *Turmeric Forte* by MediHerb.

Meriva (Indena S.p.A.) is a proprietary **phytosomal** combination of phosphatidylcholine-enriched soy lecithin and curcumin. ([Phytosome enhancers](#) combine supplement ingredients with phosphatidylcholine, a natural surfactant that dissolves in both water and oil.) A study in rats showed a 5-fold increase in bioavailability with Meriva compared to curcumin and even greater increases in other curcuminoids ([Marczylo, Cancer Chemother Pharmacol 2007](#)). A study in humans ([Cuomo, J Nat Prod 2011](#)) also suggested increased absorption from Meriva. The small study showed a significant increase in plasma levels of curcumin metabolites -- although not of curcumin itself - from capsules of Meriva compared to capsules containing unformulated curcuminoids. Both were taken with a snack providing some fat (a bagel with cream cheese). Overall, curcuminoid absorption from Meriva was 29-fold higher than from the unformulated product. Meriva is a "complex" of which 18% is curcuminoids, i.e., 1,000 mg of Meriva contains 180 mg of curcuminoids. One product in this review contains Meriva: *Doctor's Best Curcumin Phytosome with Meriva*.

NovaSol (Molecular Health Technologies) combines micronized curcumin (7% of the formula) with the surfactant **polysorbate 80** (93% of the formula), which leads to the formation of micelles (similar to the effect of bile) that improve dissolution and absorption. A study (co-authored by developers of NovaSol) in adults found this to increase bioavailability 185-fold higher than unformulated curcumin, with both taken in the morning after a 12-hour fast ([Schiborr, Mol Nutr Res 2014](#)). One product in this review contains NovaSol: *A1 Vitality Turmeric Curcumin*.

Theracurmin (Theravalues Corp.) is a "**nanoparticle**" formulation in which the size of curcumin particles is greatly reduced and microencapsulated with an emulsifying agent (gum ghatti) making the curcumin more dispersible in water. A study funded by Theravalues showed that Theracurmin raised blood levels of curcumin 27 times as much as taking an equivalent amount of regular curcumin powder ([Sasaki, Biol Pharm Bull 2011](#)). However, it is important to note that both forms of curcumin were taken with 100 mL of mineral water, and not food, putting regular curcumin at a disadvantage since fats can enhance the absorption of standard curcumin. Another study funded by Theravalues found that taking Theracurmin led to levels of curcumin in the blood (over 24 hours) that were about 4 times that of Meriva and at least 11 times that of BCM-95. Again, all were taken with just a sip of water and on an empty stomach ([Sunagawa, J Nutr Sci Vitaminol 2014](#)). Based on a small study in people, Theracurmin is estimated to have a half-life of about 9 to 13 hours ([Kanai, Cancer Chemother Pharmacol 2012](#)). Theracurmin is 30% curcumin, i.e., 60 mg of Theracurmin contains 18 mg of curcumin. (See [What It Does](#) for more about Theracurmin). One product in this review contains Theracurmin: *Integrative Therapeutics Theracurmin HP*.

Some products contain **fermented turmeric**, which is marketed as being more bioavailable than regular turmeric. However, there is no strong evidence to support this claim. A study in rats suggested that fermented turmeric was 11% more effective at raising the antioxidant concentration of plasma than unfermented turmeric, but that's not much of a difference ([Pianpumepong, In J Food Sci Technol 2012](#)). Laboratory research showed that fermentation of turmeric increases the curcumin concentration of the end product by just 10% ([Yong, J Microbiol Biotechnol 2019](#)). There do not appear to be any studies comparing the absorption of fermented turmeric vs. unfermented turmeric *in humans*.

Concerns and Cautions:

Turmeric products are believed to be generally safe for *short periods of time* at doses as high as 8 grams (8,000 mg) per day of curcumin, although they can cause side effects including **headache, nausea, diarrhea, yellow stool, allergic skin reactions**, and **increases in serum alkaline phosphatase and lactate dehydrogenase** ([Burgos-Moron, Int J Cancer 2010](#); [Lao, BMC Complement Altern Med 2006](#)). A study in 21 people with advanced stage pancreatic cancer found that 8 grams of curcuminoids taken daily for up to 18 months did not cause toxic effects ([Dhillon, Clin Cancer Res 2008](#)), although formal, long-term safety studies have not been conducted. Formulas with enhanced bioavailability could be more potent, although an 8-month clinical study involving 1 gram (1,000 mg) of Meriva (providing 200 mg of curcuminoids), taken in divided doses after breakfast and dinner, found it to be safe ([Belcaro, Alt Med Rev 2010](#)).

Adverse reactions

Nevertheless, turmeric/curcumin can cause adverse reactions, such as the following:

Liver injury

- Even small doses of curcumin (20 to 80 mg) can stimulate the gallbladder, causing greater contractions ([Rasyid, Asia Pac J Clin Nutr 2002](#)) and could, therefore, increase pain during stone passage in people with **gallstones** or in people with **gallbladder disease**. Curcumin may also increase the risk of *perforation* of the gallbladder during stone passage. This was reported in a 69-year-old man with a history of gallstones who had been taking 1,200 to 2,000 mg of curcumin (as pills and powder) daily for four months. During the passage of gallstones, his gallbladder perforated, which his doctors suggested may have been caused by the contraction of the gallbladder (which decreases the space through which the gallstone can pass) ([Vega, Am J Med Case Rep 2022](#)). Turmeric/curcumin does not, however, contribute to the formation of gallstones or gallbladder disease.
- Extended use of turmeric/curcumin for a month or longer may **adversely affect the liver** in a small percentage of people, and there has been a steady stream of such reports, mainly from the U.S. Most cases have been in women. Doctors who reviewed 20 turmeric/curcumin clinical trials in which liver function was monitored found a 5% overall incidence of abnormal liver function when supplementation lasted for longer than one month ([Lukfahr, BMJ Case Rep 2018](#)). A review of ten cases of liver injury attributed to turmeric that were reported to the U.S. Drug Induced Liver Injury Network (DILIN) between 2004 and 2022 found that eight of the 10 cases occurred among women and the average age of the affected patients was 56 years. Among the 7

supplement products tested, all contained turmeric as an ingredient, and 43% (3 out of 7) contained piperine (**black pepper extract** as a bioavailability enhancer). The average duration of turmeric supplement use prior to onset of liver injury was about 12 weeks. The most common symptoms included **jaundice**, **nausea**, and **abdominal pain**. Symptoms were mild in 50% of the cases, moderate in 40%, and, in one case, fatality occurred. All ten patients underwent genetic analyses, and 7 of the 10 affected individuals carried HLA-B*35:01, a genetic mutation that has also been linked with liver injury from green tea, *Garcinia cambogia*, and *Polygonum multiflorum* (Fo-ti) ([Halegoua-DeMarzio, Am J Med 2022](#)).

Similarly, a review of 11 other cases of turmeric-related liver injury reported in the U.S. from 2012 to 2022 found that 91% of the affected people were female, with the average age of affected individuals being 58-years-old. The duration of use before injury ranged from 2 weeks up to 13 months and averaged 8 weeks. Dosage (reported for only 5 of the patients) ranged from 100 to 3,000 mg of turmeric per day. Interestingly, in more than half of the cases (six out of 11), the affected patients were asymptomatic and were identified only from abnormal liver function test results. Among symptomatic patients, jaundice and malaise (i.e., general lack of well-being) were the most common symptoms, although fatigue, nausea, and low-grade fever were also reported. All but one of the patients showed 50% improvement in liver function test results within 30 days of discontinuing turmeric supplementation, with 4 of the patients showing improvement within 8 days ([Papke Jr., Histopathology 2024](#)).

Other symptoms reported in cases are **dark urine** (reported in a 55 year-old woman taking **Qunol Liquid Turmeric** (which contains an undisclosed amount of **black pepper extract**) at a dose of 15 mL per day for three months ([Lee, ACG Case Rep J 2020](#))), and **pale stools** ([Imam, Case Rep Gastrointest Med 2019](#)). A second case of liver injury associated with use of the same liquid *Qunol* product was reported in a 36-year-old woman who had been taking 30 mL of the supplement daily (equivalent to 2 grams of curcumin extract per day) for six months. She also developed dark urine, as well as fatigue, itchiness, and yellowing of the eyes, and tests revealed elevated levels of liver enzymes and bilirubin, which resolved one month after stopping supplementation ([Smati, Ann Intern Med Clin Cases 2023](#)). [Note: *Qunol Extra Strength Turmeric capsules* tested in this review list gamma-cyclodextrin as a bioavailability enhancer rather than black pepper extract.]

Use of **semaglutide (Ozempic)**, a GLP-1 analogue used for diabetes and weight loss, was suspected to have contributed to a case of drug-induced liver injury likely due to use of high-dose turmeric extract (3,000 mg per day standardized to 95% curcumin) in a 70-year-old women with type 2 diabetes and obesity, who came to an emergency room due to nausea, jaundice, dark colored urine, loss of appetite, and clay-colored stool. GLP-1 analogues slow the movement of food through the small intestine, which could increase the opportunity for curcumin absorption, and both turmeric and semaglutide have been shown to inhibit a pathway that regulates inflammation in the liver ([Zhang, Am J Hosp Med 2024](#)).

Yellowing of the skin

- Rarely, **yellowing of the skin** has been reported with turmeric/curcumin ingestion even in people without indication of liver injury. This was reported in a 51-year-old woman in Jordan with breast cancer who developed yellow discoloration of the skin after consuming large amounts of turmeric (three to four glasses per day of soaked fresh turmeric root and turmeric spice powder) for six months (after discontinuation of chemotherapy). She did not have yellowing of the eyes (an indication of liver-injury induced jaundice), elevated levels of liver enzymes or bilirubin, or any indication of liver injury. During this time, she also continued to have a low white blood cell (neutrophil) count, which would have been expected to increase after discontinuation of chemotherapy. Four weeks after stopping turmeric consumption, her white blood cell count returned to normal ranges, and yellowing of skin decreased in intensity but had not completely resolved ([Abdel-Razeq, Cureous 2021](#)). In another case, a 68-year-old woman in Poland with a history of breast and thyroid cancer several years prior developed yellow discoloration of the soles of her feet and toenails (but normal liver function and no yellowing of the eyes) four months after she began taking a daily curcumin supplement (*Bluebonnet Turmeric Root Extract Vcaps* – providing 332 mg of curcumin and 71 mg of demethoxycurcumin per day), which resolved two months after she stopped taking the supplement ([Horev, Drug Saf Case Rep 2015](#)).

Kidney stones

- Turmeric contains a substantial amount of **oxalate**, a substance that can bind with [calcium](#) to form calcium oxalate **kidney stones** (the most common type of kidney stone). Individuals who are prone to developing these stones may want to limit oxalate intake ([American Urological Association 2017](#)). Some low-oxalate diets advise getting no more than 50 to 100 mg of oxalate per day. An analysis of one particular turmeric powder (*Puritan's Pride*) found it to contain 20 mg of oxalate per gram, and a daily dose of 2.8 grams of this turmeric powder (containing approximately 55 mg of total oxalate) taken daily for 4 weeks was found to significantly increase urinary oxalate levels ([Tang, Am J Clin Nutr 2008](#)).

Some curcumin supplements contain very little or no oxalate, likely because it is removed during steps that isolate curcuminoids from turmeric. For example, [BCM-95](#) (Biocurmin) (found in *Terry Naturally CuraMed* in this Review) claims to be essentially free of oxalates (<5 ppm or about 0.0025 mg of oxalate per 500 mg dose), [Meriva](#) (found in *Thorne Meriva 500-SF* and *Curcumin Phytosome 500* by Intelligentlabs) claims to contain only 0.0025 mg of oxalate per 500 mg dose, and [Curcumin C3 Complex](#) (found in *Doctor's Best* and *Root2 Turmeric Extract Curcumin C3 Complex* in this Review) claims just 0.025 mg of oxalate per 500 mg dose. Be aware that some products containing these branded ingredients may contain additional forms of turmeric/curcumin or other ingredients that have not been analyzed for oxalate content.

Tooth staining

- Turmeric may **stain teeth and dental work**. Although applying a mixture of turmeric and coconut oil to teeth has been promoted on social media for whitening stained teeth, the [American Dental Association](#) says there is no evidence that turmeric has a whitening effect and laboratory research has shown that exposing teeth to turmeric solutions can stain the enamel compared to control (purified water or artificial saliva) ([Sugito, Oper Dent Endodontol Periodontol 2023](#); [Taneja, J Conserv Dent 2018](#)). Turmeric-induced tooth staining may be greatest for teeth that have *recently* been etched with acid to prepare the tooth surface for bonding with restorative materials such as crowns, veneers, or sealants, as such procedures increase the roughness of the tooth surface. Whitening with hydrogen peroxide can also *temporarily* increase tooth surface roughness and lead to staining upon exposure to turmeric, although the intensity of the amount of staining appears to be less than after etching, based on a laboratory model of the oral environment ([Kandalkar, Cureus 2025](#)). Keep in mind that the risk of staining after etching or whitening is only short-term, as the etched or whitened tooth surface eventually remineralizes due to saliva. A 33-year-old woman in Saudi Arabia with brown and white discolorations on her teeth who underwent a resin infiltration procedure (in which the outer layer of stained teeth enamel was replaced with resin to reduce the discolorations) experienced staining of the treated surfaces due to turmeric consumption (amount not specified) within a month of the procedure and required additional finishing and polishing to correct the subsequent staining ([Alkhudhayri, Cureus 2024](#)).

Lowering iron levels

- Laboratory and animal studies have suggested that curcumin can bind to and reduce the availability of iron, which **may lower iron levels in the body** ([Tuntipopipat, Int J Food Sci Nutr 2009](#); [Jiao, Blood 2009](#)), although evidence in humans and mixed and suggest that the effect of curcumin on iron absorption, if any, may depend on the form of curcumin and timing. For example, a 66-year-old man developed iron deficiency anemia three months after beginning high-dose supplementation with turmeric (six 538-mg turmeric extract capsules a day — curcumin content not specified), even though he was also taking a daily iron supplement (28 mg of elemental iron twice a day). Within two weeks of discontinuing the turmeric extract, while continuing the iron supplement, his hemoglobin levels returned to normal and his blood iron level began to increase ([Smith, Cureus 2019](#)). However, a small study in healthy women without iron deficiency found that 500 mg of *ground turmeric* added to an iron fortified meal did *not* inhibit iron absorption ([Tuntipopipat, J Clin Nutr 2006](#)). It is possible that the lack of effect of ground turmeric on iron absorption was because this amount of turmeric would provide only a small amount of curcuminoids (as little as 15 mg), in contrast to the hundreds of milligrams of curcuminoid compounds in a standard dose of curcumin (turmeric extract). Nevertheless, a controlled clinical trial among 155 healthy young adults (average age 26) with normal levels of ferritin (a blood protein that contains iron and correlates with the body's iron stores) found that taking a single, 500-mg dose of curcumin

(HydroCurc by Pharmako Biotechnologies Pty Ltd, which funded the study) 60 minutes after taking 55 mg or 200 mg of ferrous sulfate (providing, respectively, 18 mg or 65 mg of elemental iron) did *not* diminish the increase in blood levels of iron after three hours compared to taking placebo and iron. The curcumin supplement was standardized to 80% curcumin, 17% demethoxycurcumin, and 3% bisdemethoxycurcumin and formulated with LipiSpense® to increase bioavailability ([Lorinczova, Nutrients 2021](#)). *Based on the mixed results, it would seem prudent for people who are anemic or with marginal iron stores to avoid taking curcumin supplements or delay taking them until at least 60 minutes after consuming iron-containing meals or supplements.*

Use during pregnancy and nursing

- The safety of turmeric has not been well evaluated for **children or for women who are pregnant or nursing**. Therefore, it is not recommended for use by such individuals or by women who have a chance of becoming pregnant.

Drug Interactions:

- Avoid using turmeric/curcumin supplements while taking **blood-thinners** – anticoagulant/antiplatelet drugs such as aspirin, clopidogrel (Plavix), warfarin (Coumadin), rivaroxaban (Xarelto) ([Shah Biochem Pharmacol 1999](#)). Turmeric/curcumin has been shown to have anticoagulant and antiplatelet activity in laboratory studies ([Srivastava, Prostaglandins Leukot Essent Fatty Acids 1995](#); [Kim BMB Rep 2012](#)), and consuming 2.5 grams of turmeric daily for five days was reported to significantly slow blood clotting time in a 56-year-old woman in France who was taking a daily oral anticoagulant (flutidione) – however, she did not experience a bleeding event, and clotting time returned to its previous level about two weeks after stopping turmeric ([Daveluy, Therapie 2014](#)). Turmeric may also increase bleeding risk during surgical procedures even among people who are *not* taking an anticoagulant or antiplatelet drug. For example, a 43-year-old woman with active ulcerative colitis who was not taking an anticoagulant but regularly took a supplement containing extracts of turmeric and fenugreek (also known to have anticoagulant effects) experienced excessive bleeding during a routine colonoscopy that included removal of small polyps. Two weeks prior to the procedure, she had increased her daily dosage of the turmeric/fenugreek supplement (*Turmeric Forte*, by MediHerb) to up to 5 pills per day (containing a total of 585 mg of turmeric root extract, including 412 mg of curcumin, and 665 mg of fenugreek seed extract), which is 4 to 5 times the recommended daily serving on the label. Some experts recommend stopping turmeric/curcumin supplementation at least three to five days, or up to two weeks, before *any* procedure with bleeding risk ([Ghusn, Gastroenterology 2023](#)).
- Although some research indicates that curcumin may lower **blood sugar** levels and reduce the chance of prediabetes progressing to diabetes (See [What It Does](#)), this also means that it may interact with **blood sugar lowering medication**. For example, taking 475 mg daily of curcumin was shown to enhance the blood-sugar lowering effect of glyburide in people with type-2 diabetes ([Neerati, Phyto Res 2014](#)). People with hypoglycemia or those taking medication to lower blood sugar, including insulin, glyburide (DiaBeta, Micronase, Glynase) pioglitazone (Actos), and rosiglitazone (Avandia) should use with curcumin caution.
- There is some evidence that curcumin may decrease the bioavailability of the **beta-blocker drug** talinlol ([Juan, Eur J Clin Pharmacol 2007](#)).
- Some laboratory studies suggest that curcumin in turmeric may interfere with the cytochrome P450 3A (CYP3A4) subfamily of enzymes that normally metabolize tacrolimus and other drugs and, therefore, *increase* blood levels of certain drugs ([Kocher, Ernahrungs Umschau 2015](#)). This occurred in the case of 56-year-old man in the U.S. taking **tacrolimus** (FK-506, Protopic, Prograf, Hecoria), an immunosuppressant drug taken after organ transplantation. After liver transplantation the man reported adding large amounts of turmeric to his food (estimated at 15+ spoonfuls daily – which would equal about 75 grams and provide approximately 2,250 mg of curcuminoids) for at least ten days; he was hospitalized for dangerously elevated blood levels of the drug, and evidence of kidney damage (worsening edema and an elevated blood creatinine level) which improved four days after eliminating turmeric intake and temporarily withholding tacrolimus ([Nayeri, Transplant Proc 2017](#)). Turmeric has also been reported to increase the toxicity of the chemotherapy drug **bortezomib** (Velcade), which is metabolized by CYP3A4, resulting in side effects including constipation, decreased red blood cell count, night sweats, peripheral nerve pain, and rash

([Pochet, Sci Rep 2022](#)). Other drugs that are metabolized by this enzyme and could theoretically be affected this way (although there are no reported cases) include midazolam (Versed), cisapride (Propulsid), fentanyl (Sublimaze), lidocaine (Xylocaine), losartan (Cozaar), fexofenadine (Allegra), omeprazole (Prilosec), ondansetron (Zofran), the blood pressure lowering drugs felodipine (Plendil) and amlodipine (Norvasc), the antibiotic rifampin, certain calcium channel blockers (diltiazem, nicardipine, verapamil), and oral estrogen replacement therapy (Estrace, Premarin, Cenestin).

- Curcumin can increase blood levels of **testosterone** when testosterone is given orally (as testosterone undecanoate or UC) by improving testosterone absorption from the gut (due to inhibition of the intestinal enzyme UGT2B17). A small study in men (with inadequate testosterone production) showed that giving testosterone orally along with 630 mg of curcumin and a meal containing fats increased testosterone bioavailability over the first 6 hours by about 50% and boosted the maximum blood level of testosterone by 80% compared to giving the testosterone without curcumin. While this effect could be problematic if inadvertent, the researchers speculated that it may be useful for improving the bioavailability of oral testosterone ([Bachhav, Drug Met Disp 2025](#)).
- Preliminary research suggests that taking curcumin could potentially increase the effects of the anti-inflammatory drug **sulfasalazine** (Azulfidine) ([Kushuhara, B J Pharmacol 2012](#)).
- Curcumin may also *decrease* levels of certain drugs. Laboratory research has also shown that metabolites of curcumin, which occur at high levels in the blood, can activate CYP3A4 and therefore, decrease levels of drugs. Two cases have been reported in which curcumin (at <doses of 400 mg per day and 12 mg with 0.3 mg of piperine per day) appeared to significantly decrease blood levels of the immunosuppressant/anti-cancer drug **everolimus**. Blood concentration of the drug rose back to expected levels upon discontinuation of curcumin ([Mir, Ann Oncol 2017](#)). A study of 16 women with breast cancer being treated with tamoxifen found that high doses of curcumin (1,200 mg curcumin per dose taken 3 times per day) **decreased the absorption of tamoxifen** (20 - 30 mg dose) taken the same day by 8%, and by 12.8% if the curcumin included 10 mg per dose of piperine, and significantly decreased blood levels of the drug's main metabolite (endoxifen) compared to taking tamoxifen alone. Taking curcumin with tamoxifen could decrease concentrations of endoxifen below the threshold for efficacy for potentially 20 - 40% of patients, especially those with certain CYP2D6 genetic variations ([Hussaarts, Cancers 2019](#)).
- Curcumin can act as a **MAO inhibitor**, but this has only been demonstrated in animals when given intravenously at high doses ([Kulkarni, Psychopharmacology 2008](#)). There are no studies on curcumin's effect on MAO inhibition in people taking oral supplements, which have significantly lower absorption and tend to be taken in much lower doses.
- Because turmeric has antioxidant effects, there is some concern that it may decrease the effects of **alkylating chemotherapy drugs** such as melphalan (Evomela), although this has not been reported in any clinical studies or case reports ([Brokaar, Explor Res Clin Soc Pharm 2025](#)).
- Although it has been speculated that turmeric and curcumin could, theoretically, interact with estrogen, there do not appear to be any published reports of turmeric or curcumin increasing or decreasing the effects of estrogen creams or pills in people. In fact, a clinical trial among women with polycystic ovary syndrome (PCOS), found that taking a typical dose of curcumin (1,500 mg of curcumin daily) for 12 weeks did not significantly increase estrogen levels compared to placebo ([Heshmati, Phytomedicine 2021](#)). Ways in which turmeric and curcumin could theoretically interact with estrogen include: 1) competition for estrogen cell receptors ([Kim, Environ Toxicol Pharmacol 2008](#); [Kang, Phytother Res 2006](#); [Mohajeri, Pharmacol Res 2020](#)) 2) interference with metabolism of estrogen by CYP3A4, as noted earlier.

Diagnostic Test Interactions:

- Turmeric/curcumin supplementation may interfere with image quality and interpretation of **magnetic resonance imaging (MRI)**, according to one published report. A large area of a scan was difficult to read in an MRI scan for prostate cancer in an 80-year-old man who had been taking a daily curcumin tablet (12.8 grams of curcumin) for six months. Supplementation was discontinued, allowing for a clear scan one week later. Possible reasons for the interference are that turmeric/curcumin may

[bind with iron](#), which affects scans ([Samuels, Cureus 2024](#)), or the curcumin was contaminated with lead from lead chromate, which has been known to be added to turmeric and curcumin to deepen its color, as discussed in the [Quality Concerns](#) section of this Review.

- Although animal research suggests curcumin may inhibit histamine release from mast cells, and, as [discussed above](#), may reduce certain markers of inflammation and allergy, supplementing with regular curcumin (i.e., not formulated to enhance bioavailability) **does not appear to interfere with allergy skin prick tests** and may not need to be discontinued before allergy skin prick testing. A small trial showed that taking 1,000 mg of plain curcumin daily for one week before a skin prick test did not affect immediate skin-prick test wheal or flare size (the presence of which indicates allergic reaction) compared to placebo ([Gross, Allergy Asthma Proc 2022](#)). However, it's not known if curcumin formulated to increase bioavailability would affect these tests.

Concerns with black pepper extract (piperine, *Bioperine*):

- The bioavailability enhancer piperine (from black pepper extract) added to many curcumin and turmeric supplements inhibits specific enzymes ("CYP" enzymes) that otherwise break down certain compounds, and it may also affect the permeability of the intestine. It may significantly increase the bioavailability and blood levels of other compounds, so it would be best not to take if you are taking medications known to be metabolized by CYP enzymes. For example, it may inhibit the CYP3A4 enzyme, and small studies in people have shown that 20 mg piperine taken for 10 days significantly increased blood levels of the anti-seizure and nerve pain drug **carbamazepine** (Tegretol, Carbatrol, Epitol) and the nonsteroidal anti-inflammatory drug (NSAID) **diclofenac** (Voltaren, Cataflam, Flector) ([Bedada, Drug Res \(Stuttg\) 2017](#); [Bedada Xenobiotica 2016](#)). (As noted above, curcumin may also inhibit this enzyme that can potentially affect a wide range of drugs).
- Piperine may also increase blood levels of drugs metabolized by the CYP1A1 enzyme: A study in people found 20 mg of piperine taken daily for 10 days increased blood levels of the muscle relaxant drug **chlorzoxazone** (Lorzone, Paraфон) ([Bedada, Xenobiotica 2017](#)). Other drugs metabolized by this enzyme which could be affected include the bronchodilator **theophylline** (Theolair, Quibron-T, Theo-24), the antibiotic **rifampin** and **bufuralol**.
- Laboratory evidence suggests that piperine may have anti-platelet effects. It should be used with caution in people taking **blood-thinning medication** ([Raghavendra, Prostaglandins Leukot Essent Fatty Acids 2009](#)). It would seem prudent to discontinue piperine around the time of surgery.
- Large doses of piperine can potentially cause **gastric irritation and bleeding**. Even a single dose of black pepper (1.5 grams, equal to 3/4 teaspoon – which would contain about 30 to 100 mg of piperine) was shown to cause increased gastric secretion, gastric cell loss (exfoliation), and mucosal micro-bleeding in healthy volunteers – similar to effects caused by 2 regular aspirin (655 mg) ([Myers, Am J Gastroenterol 1987](#)). Bioperine is sold as a single-ingredient supplement (typically with a warning not to take more than 20 mg per day). A CL member who took *three* 10 mg Bioperine (95% piperine) capsules daily (despite a label warning not to exceed two per day) to enhance curcumin bioavailability from turmeric, reported to ConsumerLab (8/20/17) that an endoscopy revealed bleeding in her stomach, but that stomach pain subsided a week after discontinuing the product. As noted earlier, turmeric/curcumin supplements that include piperine typically provide only 2.5 to 15 mg of piperine daily which, normally, should be safe.

+ 191 sources

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