

Curious About
Curcumin?

The Golden Spice That Everyone Should Take

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#1 The Golden Spice That Makes Big Pharma Nervous

Turmeric is the golden spice that spans cultures, making all sorts of food appear more appetizing and taste delicious. It's also the spice that makes big pharma a little nervous.

Well, if there's anything in the natural world that could take away some of the "business" of the drug industry, it's turmeric.

Turmeric 101



Turmeric is an herbaceous perennial plant native to southwest India.



The spice is made by boiling the plant's rhizome (root) and drying it in hot ovens.

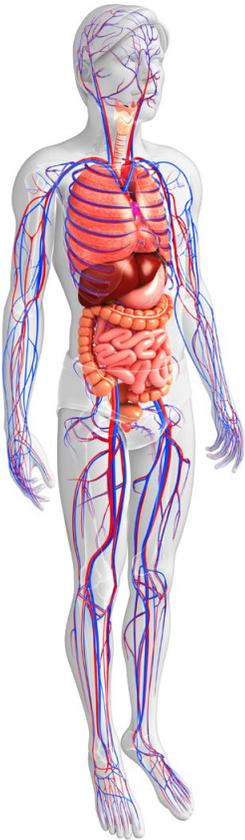


Then grinding it into a fine, golden powder. Curcumin is about 10% of the dried turmeric spice.

Turmeric has a natural golden color because it contains curcumin, a nutrition superstar that's been used medicinally for over 4,000 years! Curcumin provides enormous health-promoting benefits for almost every organ system.^{1,2}

Just take a look at the documented benefits of consuming turmeric, and its rock star, curcumin. It's easy to see why big pharma is nervous about this health-promoting, savory spice.

Curcumin's Whole-Body Benefits³⁻¹⁰



- Eases chronic inflammation by inhibiting powerful pro-inflammatory signals
- May help prevent cancer by several mechanisms, including its ability to support healthy cell growth
- Helps maintain a robust immune system
- Promotes healthy brain function, including cognition and memory
- Supports healthy blood throughout the body by maintaining healthy platelet function
- Defends against the damaging effects of estrogen-mimicking chemicals, such as those found in plastics and aerosols
- Improves bowel function and joint health

Let's take a closer look at curcumin's beneficial effects in the joints, brain, and in treating cancer.



Even though curcumin is a part of turmeric, they both have unique properties when separated. Here's an easy-to-follow breakdown of **turmeric versus curcumin** following separation:

Turmeric

- Golden color spice grown in India and Asia. It's closely related to ginger. It dates back over 5,000 years. To make the spice powder, turmeric's rhizome (root system) is cleaned, boiled, and then dried. Turmeric oil is extracted from the rhizome before drying.
- As a culinary spice, turmeric is mild and able to complement the flavor of a wide variety of foods.
- Turmeric is considered an herbal remedy in Ayurvedic and Chinese medicinal tradition. It possesses a number of pharmacological (drug-like) properties, including anti-inflammatory, analgesic, antioxidant, antispasmodic, antiseptic, anti-allergic, and anti-tumor.
- Natural turmeric powder has low bioavailability. This means that most of the turmeric ingested does not get absorbed by the intestines. Unfortunately, many of the health benefits of turmeric are hard to obtain.

Curcumin

- Curcumin belongs to a family of health-promoting compounds called curcuminoids. It's probably the most bioactive and health-promoting curcuminoid found in turmeric. It makes up to less than 10% of dried turmeric.
- Curcumin has a bolder flavor, limiting its use in recipes.
- It's pretty clear from research that curcumin is what gives turmeric all of the "drug-like" properties. So, here's what we suggest: Cook with turmeric and supplement with curcumin.
- Curcumin also has low absorption. However, researchers have significantly improved its absorption by adding natural turmeric oils. This is great news. This means that with these added absorption enhancers, we can all experience the many health benefits attributed to curcumin when taking it as a supplement.





#2 Enjoy Less
Joint Pain
With Curcumin



Add curcumin and experience less inflammation and pain



Before we jump right into curcumin's joint pain-relieving properties, let's first discuss why our joints hurt in the first place.

It all starts with inflammation.

Following an injury – which can be from a fracture or more likely from a chronic situation like the **wear and tear** of aging joints – a cascade of biochemical reactions occur that signal the body. This is what we call **inflammation**. And it can hurt!

When you experience an injury, several inflammatory signals are released at the site of the injury and interact with pain receptors. Activated pain receptors send intense signals throughout the nervous system.

If this process becomes chronic, the sensation to the pain can become exaggerated or inappropriate. For example, inflamed tissue from arthritis in the knee may be excessively tender and even a light touch might cause excruciating pain.

This is why taking steps to ease inflammation is so important. Popular drugs like ibuprofen happen to be anti-inflammatories and that's why they can relieve pain.

Unfortunately, these drugs and others like them are very effective, but they often cause alarming side effects, which compromises their long-term use and benefit.

Curcumin to the rescue!

Curcumin has been shown to possess potent anti-inflammatory properties, without all of the side effects of common drugs. Research suggests that curcumin may represent a viable alternative to common over-the-counter anti-inflammatories and that it may complement some prescription drugs used to treat arthritis.^{11,12}

How does curcumin ease inflammation and ultimately relieve joint pain? By inhibiting the production and action of powerful inflammatory signals.¹³ With less inflammation, pain subsides, and the joint begins to heal.

See a doctor if you have the following joint symptoms

Pain, swelling, or stiffness in one or more joints

Joints that are red or warm to the touch

Joint tenderness or stiffness that never goes away

Difficulty moving a joint or doing daily activities

Joint symptoms that cause you concern



#3

**Curcumin Fights
Alzheimer's
Disease**

Of the known actions of curcumin in human health, those that have shown promise against various aspects of Alzheimer's disease are among the most exciting.

A review by researchers at the University of Saskatchewan reports a number of mechanisms of action by which curcumin affects Alzheimer's disease pathology.¹⁴

Curcumin targets amyloid beta and tau proteins whose modifications are the two best known markers of Alzheimer's disease. Curcumin has shown an ability to prevent amyloid beta formation and accumulation in vitro and in animal models. In mice, curcumin administration downregulated the enzyme beta-secretase 1 (BACE1), which cleaves amyloid beta precursor protein to form amyloid beta.

Beyond curcumin's ability to inhibit amyloid-beta production, a capacity to inhibit its aggregation and promote its disaggregation has been observed. Furthermore, the compound may help prevent amyloid-beta-induced damage to brain cells.

While it is an essential mineral, copper has been implicated in the development of Alzheimer's disease. Curcumin has been shown to remove copper and inhibit fibril formation from amyloid-beta. Curcumin has also been associated with a reduction in cholesterol. (Cholesterol alters amyloid beta precursor protein to increase the production of amyloid beta.)

Further mechanisms of curcumin against Alzheimer's disease include an anti-inflammatory effect, inhibition of acetylcholinesterase (an enzyme that breaks down the neurotransmitter acetylcholine), regulation of the insulin signaling pathway and lowering oxidative stress.

"If curcumin is confirmed to show the same efficacy in humans as in in vitro and in vivo studies, the disease-modifying treatment of Alzheimer's disease is a worthwhile possibility," the authors conclude.

"In epidemiological studies, India has been established to have one of the lowest prevalence rates of Alzheimer's disease in the world. Since India has widespread turmeric consumption, with individuals consuming up to 30 grams per month, the neuroprotective role of curcumin in Alzheimer's disease is a possibility."

– Dr. Tang, 2017, *Journal of Alzheimer's Disease*





A review published this year in the International Journal of Biological Sciences discusses how curcumin helps inhibit the growth, invasion and metastasis of cancers.¹⁵

Curcumin helps prevent cancers via its actions in multiple cellular signaling pathways. These pathways, when damaged, can lead to cancer development.

#4 Anti-Cancer Properties of Curcumin

Following is a quick summary of what curcumin can do to control these pathways and prevent cancer:

1. The Wnt/beta-catenin pathway

This pathway has been implicated in the development of several human diseases. When Wnt/beta-catenin is dysregulated, several oncogenes which promote the development of cancer are expressed.

Curcumin has been found to regulate Wnt/beta-catenin signaling in liver, stomach, endometrial, colon, medulloblastoma (a type of brain cancer) and non-small cell lung cancer cells, and in breast cancer stem cells.

2. The PI3K/Akt pathway

This pathway helps control cell proliferation and metabolism. Curcumin has been found to affect PI3K/Akt in breast, ovarian, prostate, thyroid and human colon cancer cells and non-small cell lung cancer cells, in lymphoma and in liver cancer stem cells.

3. The JAK/STAT pathway

This pathway plays a role in cytokine-mediated immune responses. Curcumin's impact on the JAK/STAT pathway has been observed in retinoblastoma, small cell and non-small cell lung cancers, and laryngeal squamous cell carcinoma.

4. The mitogen-activated protein kinase pathway

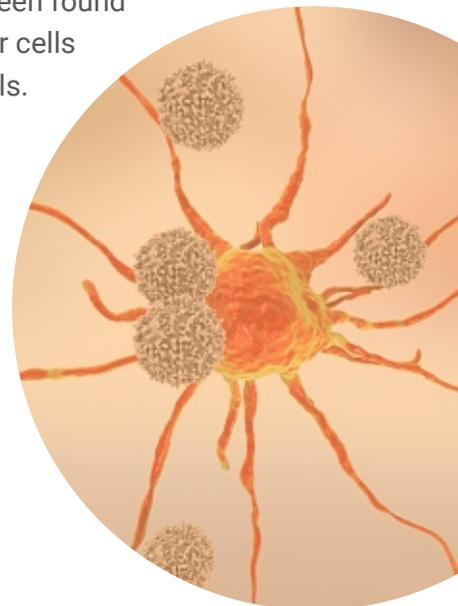
This pathway, often called MAPK, facilitates signaling from cell surface receptors to the DNA in the cells' nucleus. MAPK signaling controls cell proliferation, immune responses and the initiation of cancer.

Curcumin's anticancer effects influence MAPK signaling pathways in human placental choriocarcinoma, retinoblastoma, lung adenocarcinoma and human monocytic leukemia cells.

5. The p53 pathway

This is a tumor suppressor signaling pathway, that when activated, helps prevent cancer cell proliferation and induces programmed cell death. Curcumin has been shown to increase the expression of p53 in gastric cancer, oral squamous cell carcinoma and multiple myeloma.

Curcumin clearly influences numerous pathways involved with cancer. "An in-depth understanding of the anticancer mechanisms of curcumin will be helpful for developing this promising compound as a therapeutic agent in clinical management of cancer," the authors of the review conclude.



Curcuminoids

The health-promoting compounds found in curcumin are called curcuminoids. The latest research seems to indicate that the more curcuminoids that your body receives, the greater the health benefit.

The problem is that as curcuminoids are released into your digestive system, they often bind with other compounds. This makes it hard for them to absorb into your circulation. Research has highlighted a new way to formulate curcumin, so that the curcuminoids are bound less in the digestive tract.

The result is a large increase of FREE curcuminoids into your circulation. This new formulation offers over 45x more bioavailable of free curcuminoids than standard curcumin and provides 270 times better absorption of total curcuminoids.

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