

Randomized Double-Blind Study Shows Saffron Can Help ADHD

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

October 24, 2022

STORY AT-A-GLANCE

- › The herb saffron may be a safe and effective treatment for attention deficit hyperactivity disorder (ADHD), rivaling Ritalin in effectiveness
- › Children with ADHD were randomly assigned to receive either 20 to 30 milligrams a day (mg/d) of methylphenidate (Ritalin) or 20 to 30 mg/d of saffron capsules
- › The treatments worked equally well, with changes in Teacher and Parent ADHD Rating Scale scores statistically the same, which suggests both methylphenidate and saffron had the same effect on ADHD symptoms
- › Therapeutically, saffron has been shown to enhance memory while also possessing antidepressant, anti-anxiety and neuroprotective effects that may be valuable in the treatment of ADHD

The herb saffron may be a safe and effective treatment for attention deficit hyperactivity disorder (ADHD).¹ This common neuropsychiatric disorder affects up to 7% of school-age children, causing a mix of symptoms including difficulty concentrating and hyperactivity to mood swings and short attention span.

In up to 60% of cases, symptoms persist into adulthood,² where the disorder is linked to social problems, low self-esteem and low quality of life. It's also known to affect academic achievement.

The standard, first-line approach to treating ADHD is medication, typically central nervous system stimulants such as methylphenidate (Ritalin). However, such drugs may cause side effects such as difficulty sleeping, loss of appetite and nausea. In some cases, the side effects, such as sleep loss, may be so severe that they undermine any benefits of the drug.³

What's more, an estimated 30% of children do not respond to Ritalin,⁴ and others give up the medication due to its side effects. Oftentimes, the drug treatment does not even lead to meaningful improvements.

In a study that analyzed the effects of drug versus behavioral treatment on homework performance in children with ADHD, the drug treatment led to no significant improvements in homework completion or accuracy compared to placebo.⁵

"So far, the outcome with these approved medications for ADHD are often unsatisfactory and there is an empty place to be filled by alternative medications, in particular herbal medicines," researchers wrote in the *Journal of Child and Adolescent Psychopharmacology*.⁶

They noted that herbal medicine is still used for health care for upward of 80% of the world's population, making saffron a reasonable choice for ADHD treatment.

Saffron Works as Well as Ritalin for Treating ADHD

In a six-week, randomized double-blind study, 54 children between the ages of 6 and 17 years were randomly assigned to receive either 20 to 30 milligrams a day (mg/d) of methylphenidate or 20 to 30 mg/d of saffron capsules.⁷

The treatments worked equally well, with changes in Teacher and Parent ADHD Rating Scale scores statistically the same, which suggests both methylphenidate and saffron had the same effect on ADHD symptoms.

"Short-term therapy with saffron capsule showed the same efficacy compared with methylphenidate," the researchers noted, adding that the frequency of adverse effects

was also similar between the two groups.

Saffron, known as the world's most expensive spice by weight, has traditionally been valued for its antispasmodic, antiseptic, antidepressant, anticancer and anticonvulsant effects, and the researchers noted that saffron's active compounds are known to "increase the reuptake inhibition of dopamine and norepinephrine and are N-methyl D-aspartic acid (NMDA) receptor antagonists and GABA- α agonists."

Therapeutically, they add, saffron has been shown to enhance memory while also possessing antidepressant, anti-anxiety and neuroprotective effects that may be valuable in the treatment of ADHD.

"Taken together, since saffron is a 'putative' antidepressant and antidepressant agents are acceptable for treatment of ADHD, we hypothesized that saffron intake would be of benefit in these patients," the researchers wrote. "In addition, having the ability to affect both monoaminergic and glutamatergic systems also qualify saffron as a possible candidate for the treatment of ADHD due to malfunction of these circuits in this disorder."⁸

What Else Is Saffron Good For?

Saffron (*Crocus sativus*), a spice that resembles orange threads, is perhaps most widely known for adding a unique, pungent flavor to everything from risotto to meat and vegetable dishes and desserts. However, it's been valued for its medicinal properties since ancient times, which we now know are due to at least four active ingredients, which include crocin, crocetin, picrocrocin and safranal.⁹

Crocetin, in particular, is known to penetrate the blood-brain barrier and reach the central nervous system, suggesting it can be effective in neurodegenerative disorders.¹⁰ Further, as mentioned, saffron has antidepressant properties, which are similar to those of antidepressant drugs, but with fewer reported side effects.¹¹

Saffron also benefits cognitive function, with a 2010 study involving patients with mild-to-moderate Alzheimer's disease finding those taking 15 mg of saffron twice a day for

16 weeks demonstrated "significantly better outcomes on cognitive function" than those receiving a placebo.¹²

Saffron also shows benefits in preventing high blood pressure,¹³ reducing the symptoms of premenstrual syndrome¹⁴ and treating metabolic syndrome.¹⁵ According to a study published in the Journal of the Science of Food and Agriculture:¹⁶

"Saffron is an extensively used food additive for its colour and taste and has been widely used in traditional as well as modern medicine to treat several illnesses including cardiovascular diseases ...

It has been proved that saffron has an important role in the management of metabolic syndrome because of its marvelous activities including antidiabetic, antiobesity, hypotensive and hypolipidemic properties."

Environmental Factors Known to Influence ADHD

Saffron is just one natural treatment that shows promise for treating ADHD – there are many others as well. It's important to understand that ADHD does appear to lead to changes in the brain, with children with the disorder having smaller overall brains, as well as reduced volume in five specific brain regions: the nucleus, putamen, nucleus accumbens, amygdala and hippocampus.¹⁷

The differences in volume were slight and seemed to become less magnified by adulthood, which suggests ADHD may be characterized by delayed development in certain brain regions. The biggest size difference occurred in the amygdala, which is associated with emotions and hasn't previously been widely linked to ADHD.¹⁸

That being said, there are many factors involved, including nutrition and exposure to toxins in the environment. Environmental and lifestyle factors likely influence both the diagnosis of this disease (as well as trigger ADHD-like symptoms) and its progression or healing. For instance:

Children with higher levels of the endocrine-disrupting chemical bisphenol-A (BPA) are more likely to be diagnosed with ADHD¹⁹

Children exposed to higher levels of organophosphate pesticides may have a twofold to threefold increased risk of being diagnosed with ADHD²⁰

Exposure to tobacco smoke in utero is associated with ADHD²¹

Eating an unhealthy diet during pregnancy may increase ADHD symptoms in youth²²

Drinking sugar-sweetened beverages like soda is associated with ADHD²³

Gluten sensitivity may be common in children with ADHD, and a gluten-free diet has been shown to significantly improve behavior in kids²⁴

Artificial food coloring and other food additives, such as preservatives, are associated with increased hyperactivity in children²⁵

Vetiver Oil and Other Natural Treatments for ADHD

Beyond saffron, what else may work to reduce the symptoms of ADHD? Chamomile, another medicinal plant, has been shown to improve both hyperactivity and inattention in youth with ADHD.²⁶ In addition, essential oils have repeatedly been shown to do so, particularly vetiver oil (vetiver is a type of Indian grass).

In one study, when children inhaled the oil three times a day for 30 days they had improved brain wave patterns and behavior and did better in school.²⁷ Eighty percent of the children also improved when using cedarwood essential oil similarly.

Improvements in brain activity were revealed via electro-encephalograph (EEG), which measures electrical impulses moving through the brain. This allowed researchers to determine whether the children's brains were functioning primarily in a beta (i.e., alert) state or a theta state (i.e., lack of focus).

Improvements in beta-theta ratios were noted following the use of vetiver essential oil, while parents also noted improvements in symptoms. Another study, published in the *Journal of Intercultural Ethnopharmacology*, also showed vetiver essential oil to have particular promise for ADHD.

The animal study revealed changes in brain activity suggestive of increased alertness,²⁸ while research on human subjects revealed faster reaction times and stimulation of sympathetic nerve activity following inhalation.²⁹ Inhalation via a diffuser or applying the diluted oils topically to the skin are two effective ways to use essential oils for ADHD.

Exercise and Diet Must Be Addressed in ADHD

If your child is struggling with ADHD or ADHD-like symptoms, I recommend consulting with a holistic physician who is experienced in treating ADHD using natural methods. Toward this end, addressing both exercise and diet will be essential.

Exercise enhances cognitive performance and brain function, especially during tasks requiring greater executive control.³⁰ Executive control is the ability to maintain focus, working memory and cognitive flexibility (or switching between tasks), and is often impaired in children with ADHD.³¹

Exercise appears to benefit cognitive, behavioral and socio-emotional functions in children and adults with ADHD.³² As for diet, I recommend addressing the following factors:

- **Too much sugar** – High-sugar foods and starchy carbohydrates lead to excessive insulin release, which can cause falling blood sugar levels, or hypoglycemia. Hypoglycemia, in turn, causes your brain to secrete glutamate in levels that can cause agitation, depression, anger, anxiety and panic attacks.

Besides that, sugar promotes chronic inflammation in your body, and many studies have demonstrated the connection between a high-sugar diet and worsened mental health.

- **Gluten sensitivity** – The evidence suggesting that gluten sensitivity may be at the root of a number of neurological and psychiatric conditions, including ADHD, is quite compelling. One study went so far as to suggest celiac disease should be added to the ADHD symptom checklist.³³
- **An unhealthy gut** – As explained by Dr. Natasha Campbell-McBride, a medical doctor with a postgraduate degree in neurology, toxicity in your gut can flow throughout your body and into your brain, where it can cause symptoms of autism, ADHD, dyslexia, dyspraxia, depression, schizophrenia and other mental disorders.³⁴

Reducing gut inflammation is imperative when addressing mental health issues, so optimizing your child's gut flora is a critical step. This includes not only avoiding processed, refined foods but also eating traditionally fermented foods, such as fermented vegetables.

If you cannot get your child to eat fermented foods on a regular basis, a high-quality probiotic supplement may be highly beneficial in correcting abnormal gut flora that may contribute to brain dysfunction.

- **Animal-based omega-3 fat deficiency** – Kids low in omega-3 fats may be significantly more likely to be hyperactive, struggle with learning disorders and display behavioral problems. A clinical study published in 2007 also examined the effects of krill oil on adults diagnosed with ADHD.³⁵

In that study, patients improved their ability to concentrate by an average of over 60% after taking a daily 500-milligram (mg) dose of krill oil for six months. They also reported a 50% improvement in planning skills and a close to 49% improvement in social skills.

- **Food additives and GE ingredients** – A number of food additives are thought to worsen ADHD, and many have subsequently been banned in Europe. Potential culprits to avoid include Blue #1 and #2 food coloring; Green #3; Orange B; Red #3 and #40; Yellow #5 and #6; and sodium benzoate, a preservative.

Research also shows that glyphosate, the active ingredient in Monsanto's Roundup herbicide, limits your body's ability to detoxify foreign chemical compounds. As a result, the damaging effects of those chemicals and environmental toxins are magnified, and may result in a wide variety of diseases, including brain disorders that can affect behavior.

Getting back to saffron, more research is needed to confirm its effects on ADHD, but so far the results look promising. If you have a child with ADHD who has not responded to other treatments and lifestyle changes, talk to your holistic practitioner about whether this herbal remedy could be helpful for your child.

Sources and References

- ^{1, 2, 6, 7, 8} [Journal of Child and Adolescent Psychopharmacology February 11, 2019](#)
- ³ [Pediatrics November 23, 2015](#)
- ⁴ [J Am Acad Child Adolesc Psychiatry. 1996 Apr;35\(4\):409-32](#)
- ⁵ [Journal of Consulting and Clinical Psychology September 12, 2016](#)
- ^{9, 10} [Eur J Drug Metab Pharmacokinet. 2018 Aug;43\(4\):383-390](#)
- ¹¹ [J Affect Disord. 2018 Feb;227:330-337](#)
- ¹² [Journal of Clinical Pharmacy and Therapeutics October 2010; 35\(5\); 581-588](#)
- ¹³ [Iranian Journal of Basic Medical Sciences November 2015; 18\(11\): 1143-1146](#)
- ¹⁴ [Drug Res \(Stuttg\). 2015 Jun;65\(6\):287-95](#)
- ^{15, 16} [J Sci Food Agric. 2017 Apr;97\(6\):1679-1685](#)
- ¹⁷ [The Lancet Psychiatry February 15, 2017](#)
- ¹⁸ [CNN February 15, 2017](#)
- ¹⁹ [Environ Res. 2016 Oct;150:112-8](#)
- ²⁰ [Andrology. 2016 Jul;4\(4\):695-705](#)
- ²¹ [Am J Psychiatry. 2003 Jun;160\(6\):1028-40](#)
- ²² [J Child Psychol Psychiatry. 2016 Aug 18](#)
- ²³ [Int J Environ Res Public Health. 2016 Jul; 13\(7\): 678.](#)
- ^{24, 33} [Prim Care Companion CNS Disord. 2011; 13\(3\): PCC.10br01104](#)
- ²⁵ [Lancet. 2007 Nov 3;370\(9598\):1560-7](#)
- ²⁶ [Phytomedicine. 2009 Apr;16\(4\):284-6](#)
- ²⁷ [Holistic Nursing Practice. January 2020](#)
- ²⁸ [Journal of Intercultural Ethnopharmacology January-February 2016](#)
- ²⁹ [Biomed Res. 2012;33\(5\):299-308](#)
- ^{30, 31} [Pediatrics. 2014 Oct;134\(4\):e1063-71](#)
- ³² [J Neural Transm \(Vienna\). 2017 Feb;124\(Suppl 1\):3-26](#)

- ³⁴ FxMedicine. Natasha Campbell-McBride
- ³⁵ Nutraingredients.usa.com January 5, 2007