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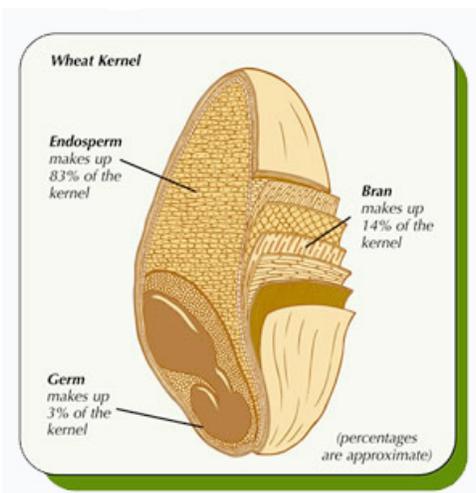
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## Wheat Germ

by Dr. Pina LoGiudice and Dr. Peter Bongiorno

Directors of [Inner Source Health](http://www.InnerSourceHealth.com)



### What is Wheat Germ?

Wheat germ is the most vitamin and mineral rich part of the wheat kernel. In fact, the germ is actually the embryo of the wheat plant. This embryo will eventually nourish the new wheat plant. This is the reason why it has so many wonderful nutrients.

Unfortunately, this kernel, which includes the wheat germ, is tragically removed during the refining of whole wheat grains to white flour.

In the manufacturing process, it is removed because its healthy oils can go rancid quickly, so removing it makes it easier for food production companies to keep in storage much longer.

The germ itself makes up about 3% of the kernel, and you need over 50 pounds of wheat to get each pound of wheat germ.

### Why Is It So Good for Us?

Because it is meant to feed the new plant, wheat germ is packed with good nutrients. Two tablespoons of raw wheat germ have about 1.5 grams of unsaturated fat, 9 grams of carbohydrates, 4 grams of protein, 2



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grams dietary fiber, 2 grams of sugars, no cholesterol and about 60 calories. That is plenty of protein and fiber.

Plus, it has a number of other healthy nutrients for your body:

### *B vitamins*

Wheat germ is packed with important B vitamins, such as folate, vitamin B1 (thiamin), and vitamin B6. B vitamins are important for the heart, to make proper mood chemicals for our brain and are critical for cardiovascular health.

### *Fiber*

It has lots of fiber, which is necessary for good blood sugar balance, cholesterol control, intestinal health, and detoxification.

### *Phytosterols*

Wheat germ has phytosterols, which are actually steroid compounds similar to cholesterol. These phytosterols can lower unhealthy cholesterol and promote a healthy heart. One French study from 1992 found that eating 30 grams, or about a quarter of a cup, of raw wheat germ a day for 14 weeks lowered total cholesterol by 7.2 percent. It also lowered LDL, or "bad" cholesterol by 15.4 percent and triglycerides, a fat and sugar molecule in your blood, by 11.3 percent.<sup>i</sup> Another study from 2003 American Journal of Clinical Nutrition study showed that if you removed the phytosterols from the wheat germ, you will not get the same cholesterol-lowering effect. This shows us that the phytosterols are the compound needed to lower cholesterol. In this study, both wheat germ with the original phytosterols reduced cholesterol absorption from the intestines by an impressive 42.8 percent.<sup>ii</sup>

Other studies suggest that reducing bad cholesterol just 7 percent can lead to a 15 percent lower risk of heart disease. Since wheat



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germ is one of the most robust sources of phytosterols, wheat germ may indeed be a superfood for you to lower your bad LDL cholesterol.

### *Healthy Fatty Acids*

Wheat germ is a good source of omega-3 fatty acids. Omega-3 fatty acids can help lower cholesterol, lower inflammation, and support a healthy nervous system which can lower anxiety levels and improve mood.

### *Minerals*

Wheat germ also contains tons of minerals, including iron, zinc, magnesium, calcium, selenium, and manganese. Minerals are co-factors that our body uses to repair itself and run the chemical reactions that keep us healthy.

### *Vitamin E*

Wheat germ includes plenty of vitamin E. This vitamin serves as a powerful antioxidant that protects the wheat germ oil from becoming rancid too quickly. Vitamin E is an antioxidant which can protect cell membranes, brain cells, and cholesterol molecules from free radical damage. Free radical damage greatly contributes to plaque build up in the arteries, called atherosclerosis. Vitamin E can help stop that process.

Vitamin E not only protects fats, cholesterol and cell membranes from damage, it is also important for good liver detoxification, immune function, and blood glucose control in both healthy and diabetic individuals.



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A 2008 study in rats showed that rats given wheat germ had significantly higher protective levels of vitamin E in their blood and liver, conferring greater anti-oxidant protection.<sup>iii</sup>

While some research is not totally clear to the benefit of supplementing with vitamin E, vitamin E rich foods like wheat germ are shown to be very healthy every time. People who do decide to supplement should use mixed tocopherols, which are more like the type found in natural food.

### **Fermented Wheat Germ for Cancer and Arthritis**

There is a form of wheat germ called fermented wheat germ. This form has had impressive research and has been used in cancer and arthritis treatment. First invented in the early 1990's in Hungary, this wheat germ differs from ordinary wheat germ because it is fermented with baker's yeast to concentrate certain naturally active compounds called benzoquinones.

In our clinic, we work with many patients going through therapy for cancer. For many of them, we highly recommend fermented wheat germ compounds. A study in the British Journal of Cancer showed that this compound can lower the incidence of cancer spreading in colon cancer patients, as well as greatly reduce recurrence, and increase overall survival.<sup>iv</sup> Other studies showed a decrease in recurrence of melanoma (a very difficult to treat form of skin cancer) in patients who were using chemotherapy<sup>v</sup>, and helped raise white counts and lower fevers in kids undergoing chemotherapy.<sup>vi</sup> One recent study suggested that the fermented wheat germ was able to reduce oxidative stress in patients with head and neck cancers, and improve these patients' quality of life.<sup>vii</sup>

We also recommend this fermented version of wheat for patients with an auto-immune condition called rheumatoid arthritis. One preliminary study in the 2006 journal Clinical Experiments in Rheumatology of 15 patients even showed that in these severe cases, after 6 and 12 months, morning



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stiffness was reduced when patients used the fermented wheat germ, and half the patients were able to significantly reduce their use of steroids. Steroids are drugs that suppress the immune system, and can cause many side effects, including digestive problems, skin thinning, increase cancer risk, and weight gain.

This wonderful fermented version of wheat germ showed no side effects in the patients who used it.

### **Processing and Storage**

Because the oils and anti-oxidant content are a major part of what make the wheat germ so healthy, the germ is extremely perishable when exposed to air and can get rancid during the milling process. It is important when it is processed that there is an attempt to decrease the exposure to air as much as possible.

Some wheat germ is also 'defatted' by using chemicals called hexanes, and we recommend these types are avoided, for these forms do not have any of the healthful oils or vitamin E.



You should refrigerate your wheat germ after you open it to keep it fresh.

### **How You Can Get Wheat Germ Into Your Diet**

While most of us get more than enough wheat in our diet, because the wheat germ is removed, we are usually not getting the best part of the wheat.

Wheat germ is fantastic food that usually is in the form of a coarse powder. You can easily incorporate it into protein shakes, oatmeal, casseroles, muffins, and sprinkled over cereal or yogurt. We like to make pancakes with it. You can even make a tea out of it by brewing one tablespoon per two cups of water, and steep for 20 minutes, then filter and drink.



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## When Should You Stay Away From Wheat Germ?

While wheat germ is generally a wonderful food for health, patients who have Celiac's Disease or other wheat and gluten allergies or sensitivities should stay away from wheat germ as well as other wheat and gluten products.

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<sup>i</sup> Cara L, Dubois C, Borel P, Armand M, Senft M, Portugal H, Pauli AM, Bernard PM, Lairon D. Effects of oat bran, rice bran, wheat fiber, and wheat germ on postprandial lipemia in healthy adults. *Am J Clin Nutr.* 1992 Jan;55(1):81-8.

<sup>ii</sup> Ostlund RE Jr, Racette SB, Stenson WF. Inhibition of cholesterol absorption by phytosterol-replete wheat germ compared with phytosterol-depleted wheat germ. *Am J Clin Nutr.* 2003 Jun;77(6):1385-9.

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<sup>iv</sup> Jakab F, Shoenfeld Y, Balogh A, Nichelatti M, Hoffmann A, Kahán Z, Lapis K, Mayer A, Sápy P, Szentpétery F, Telekes A, Thurzó L, Vágvölgyi A, Hidvégi M. A medical nutriment has supportive value in the treatment of colorectal cancer. *Br J Cancer.* 2003 Aug 4;89(3):465-9.

<sup>v</sup> Demidov LV, Manziuk LV, Kharkevitch GY, Pirogova NA, Artamonova EV. Adjuvant fermented wheat germ extract (Avermar) nutraceutical improves survival of high-risk skin melanoma patients: a randomized, pilot, phase II clinical study with a 7-year follow-up. *Cancer Biother Radiopharm.* 2008 Aug;23(4):477-82.

<sup>vi</sup> Garami M, Schuler D, Babosa M, Borgulya G, Hauser P, Müller J, Paksy A, Szabó E, Hidvégi M, Fekete G. Fermented wheat germ extract reduces chemotherapy-induced febrile neutropenia in pediatric cancer patients. *Pediatr Hematol Oncol.* 2004 Oct;26(10):631-5.

<sup>vii</sup> Sukkar SG, Cella F, Rovera GM, Nichelatti M, Ragni G, Chiavenna G, Giannoni A, Ronzani G, Ferrari C. A multicentric prospective open trial on the quality of life and oxidative stress in patients affected by advanced head and neck cancer treated with a new



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benzoquinone-rich product derived from fermented wheat germ (Avemar), *Mediterr J Nutr Metab* (2008).