

# Rice bran oil

**Rice bran oil** is the oil extracted from the hard outer brown layer of rice after chaff ( rice husk). It is notable for its high smoke point of 232 °C (450 °F) and its mild flavor, making it suitable for high-temperature cooking methods such as stir frying and deep frying. It is popular as a cooking oil in several Asian countries, including Bangladesh, Japan, India and China.<sup>[1]</sup>



A bottle of rice bran oil, flanked by smaller bottles of sesame oil and hemp seed oil.

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## Uses

Rice bran wax, obtained from rice bran oil and palpanese extract, is used as a substitute for carnauba wax in cosmetics, confectionery, shoe creams and polishing compounds. It is an edible oil which is used in the preparation of vegetable ghee.

## Composition

Rice bran oil has a composition similar to that of peanut oil, with 38% monounsaturated, 37% polyunsaturated, and 25% saturated fatty acids. The fatty acid composition is:<sup>[1]</sup>

Fatty acid	Percentage
C14:0 Myristic acid	0.6%
C16:0 Palmitic acid	21.5%
C18:0 Stearic acid	2.9%
C18:1 Oleic acid (an Omega 9 fatty acid)	38.4%
C18:2 Linoleic acid (LA, an Omega 6 fatty acid)	34.4%
C18:3 $\alpha$ -Linolenic acid (ALA, an Omega 3 fatty acid)	2.2%

### Physical Properties of Crude & refined Rice bran oil <sup>[2][3]</sup>

character	Crude Rice bran oil	Refined oil
Moisture	0.5-1.0%	0.1-0.15%
Density (15-15 °C)	0.913-0.920	0.913-0.920
Refractive Index	1.4672	1.4672
Iodine value	85-100	95-104
Saponification value	187	187

Unsaponifiable matter	4.5-5.5	1.8-2.5
Free fatty acids	5-15%	0.15-0.2%
oryzanol	2.0	1.5-1.8
Tocopherol	0.15	0.05
Color(Tintometer)	20Y+2.8R	10Y+1.0R

## Health benefits

A component of rice bran oil is the antioxidant  $\gamma$ -oryzanol, at around 2% of crude oil content. Thought to be a single compound when initially isolated, it is now known to be a mixture of steryl and other triterpenyl esters of ferulic acids.<sup>[1]</sup> Also significant is the relatively high fractions of tocopherols and tocotrienols, together as vitamin E. Rice bran oil is also rich in other phytosterols.

### Cholesterol

Literature review shows rice bran oil and its active constituents improve blood cholesterol by reducing total plasma cholesterol and triglycerides, and increasing the proportion of HDL cholesterol.<sup>[4]</sup> Results of an animal study<sup>[6]</sup> indicated a 42% decrease in total cholesterol with a 62% drop in LDL cholesterol, when researchers supplemented test subjects' diets with fractionated vitamin E obtained from rice bran oil.

### Menopause

One small-scale study of  $\gamma$ -oryzanol, a mixture of chemicals found in rice bran oil, found that 90% of the women had some form of relief from hot flashes after taking a supplement of the purified concentrate for four to six weeks.<sup>[6]</sup>

### Antioxidant stability

The oryzanol content of the pan heated rice bran oil samples remains approximately the same even when heated at 180°C for 8 hours, while a decrease in oryzanol content was reported in the case of microwave heating at the same conditions.<sup>[7]</sup>

### Omega fatty acids and inflammation

Rice bran oil has about 2% omega 3 fatty acids in it (more than olive oil), and 33% omega 6 fatty acids. Its omega 6-to-omega 3 ratio is much higher than olive oil. A high omega 6-to-omega 3 ratio can be a factor in increasing inflammation.

Rice bran oil has been tested to reduce cholesterol levels.

### Calcium Absorption

Rice bran might help lower cholesterol because the oil it contains has substances that might decrease cholesterol absorption and increase cholesterol elimination. One of the substances in rice

bran might decrease calcium absorption; this might help reduce the formation of certain types of kidney stones.<sup>[8]</sup>

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