Endorsement of Health benefits of ‘Oryzanol’
by National Institute of Nutrition, Hyderabad, a
premier Nutritional Research Institute of Indian
Council of Medical Research, Government of India

1. National Institute of Nutrition in its Dietary guidelines for year 2011 has mentioned that Oryzanol found in Rice Bran Oil is helpful in reducing-

   a. Cholesterol
   b. Oxidative damage due to ageing
   c. Inflammation which occur in chronic diseases.


2. In response to a RTI, ref no. D/RTI/2009/039, the National Institute of Nutrition has confirmed several health benefits of Oryzanol referring to various Scientific Studies, which are as follows-

   a. One of the most important properties of the oryzanol are its cholesterol lowering property. There are several studies in human and animals showing that the oryzanol content of the Rice Bran Oil has the property of lowering total cholesterol, LDL cholesterol and increasing HDL cholesterol. In addition, oryzanol also decrease plasma triglyceride levels.

   b. Oryzanol is also a potent antioxidant. The antioxidant activity of Oryzanol has been shown to be 10 times higher than that of tocopherols. High content of oryzanol provides oxidative stability to rice bran oil and improve its shelf life.

   c. Oryzanol has been proven effective to treat symptoms of menopause such as hot flashes.

   d. Oryzanol has a protective role in ultraviolet light induced lipid peroxidation and hence it is used as sunscreen agent in cosmetics.
Dear Dr. Dhir Singh

Sub: Information under the Right to Information Act, 2005
Regarding Amendment in standards of Rice Bran Oil.

This has reference to your letter No. P.15025/1/2009-PH(F) dated 12th
Jan. 2009 with regards to the above subject. Please find enclosed herewith
the comments given by my colleague, Dr. Ahamed Ibrahim, Scientist ‘C’.

With Regards

Encl: aa

Yours sincerely,

(B. Sesikeran)

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A. What is the difference between chemically refined rice bran oil and physically refined rice bran oil?

Vegetable oils consist of two fractions namely glyceride fraction which contains fatty acids and non-glyceride fraction (unsaponifiable matter) which contains several minor components such as tocopherols, oryzanol, lignans etc which are having several health benefits. The crude rice bran oil is subjected to chemical or physical refining to meet the specifications of the edible grade vegetable oil. Physical refining is the process in which, rice bran oil is subjected to series of filtrations and heating in order to remove the excess free fatty acids, odor and color. In case of chemical refining, the crude oil is subjected to alkali treatment which removes substantial amount of non-glyceride components such as oryzanol. It has been shown that chemical refining of rice bran oil removes a large portion of oryzanol (~90%) whereas in case of physical refining, the loss is minimal (1-5%). Hence physical refining has the advantage of retaining most of the oryzanol which has several health benefits.

B. Reasons for allowing higher standard of 4.5% (max) of unsaponifiable matter in case of physically refined rice bran oil as against 3.5% only (max) unsaponifiable matter standard in case of chemically refined rice bran oil.

The unsaponifiable matter content of rice bran oil depends on the type of refining process. At present, PFA prescribed the unsaponifiable matter limit of 3.5% (max) for refined rice bran oil. This unsaponifiable matter limit of 3.5% can be meet by chemical refining process. But in case of physically refined rice bran oil, it is difficult to meet the limit of 3.5% because of high levels of oryzanol. Due to this, the vegetable oil industry is forced to remove the oryzanol component of the oil. Because of these reasons, the vegetable oil industry has requested the government to raise the limit of unsaponifiable matter to 4.5%.

C. Any negative or positive impact of higher unsaponifiable matter standard in physically refined rice bran oil on the health of consumers and views expressed/reports by scientific institutions in this matter.

There has been numerous studies (human & animal) including studies conducted at NIN has demonstrated that physically refined rice bran oil possess hypocholesterolemic activity. So far no adverse comments on unsaponifiable components of rice bran oil have appeared in the literature regarding their toxicity. The health benefit of the unsaponifiable matter has been reported in the following scientific publications.

1. Rice bran oil and oryzanol reduces plasma lipids and lipoprotein cholesterol concentrations and aortic cholesterol ester accumulation to a greater extent than ferulic acid in hypercholesterolemic hamster. Journal of Nutritional Biochemistry; Vol 18; 105-112, 2007.


D. Justification for laying down minimum 1% oryzanol content standard for physically refined rice bran oil.

The oryzanol content of rice bran oil depends on the type of refining process. It has been shown that in case of physically refined rice bran oil, the oryzanol content ranges from 1-1.7%, whereas for chemically refined oil it ranges from 0.19-0.20%. The purpose of fixing the oryzanol content is to show that the oil was subjected to physical refining only.

E. Is it good for the health of the consumers? If so, what are the different health benefits of oryzanol?

Several scientific evidences documented that rice bran oil is the healthiest cooking oil having desirable fatty acid composition with higher oxidative stability. It also contains unique micro nutrients such as oryzanol which is known to have several health benefits. The various health benefits of oryzanol are as follows:

1. One of the most important properties of the oryzanol is its cholesterol lowering property. There are several studies in human and animals showing that the oryzanol content of the rice bran oil has the property of lowering total cholesterol, LDL cholesterol and increasing HDL cholesterol. In addition, oryzanol also decrease plasma triglyceride levels.

2. Oryzanol is also a potent antioxidant. The antioxidant activity of oryzonol has been shown to be 10 times higher than that of tocopherols. High content of oryzonol provides oxidative stability to rice bran oil and improve its self life.

3. Oryzanol has been proven effective to treat symptoms of menopause such as hot flashes.

4. Oryzanol has a protective role in ultraviolet light induced lipid peroxidation and hence it is used as sunscreen agent in cosmetics.