Acta Scientific Nutritional Health (ASNH)

Mini Review

Special Issue 1- 2019

# Rice Bran Oil - A New Option for Cooking Oil

**Vithu Prabha***

*Assistant Professor, Agriculture Engineering, SIET (Anna University), Coimbatore, India*

***Corresponding Author:** Vithu Prabha, Assistant Professor, Agriculture Engineering, SIET (Anna University), Coimbatore, India.

**Received:** August 21, 2019

**Published:** September 05, 2019



Edible and nonedible oils from various food materials vary in biochemical functions thus are important ingredients in various food preparations. Most common among them are coconut oil, mustard oil and sunflower oil, which are used according to the type of cuisines and depending on sensory appealing. In the market, different cooking oils are available now. However, the use of these oils, their availability and cost factors are major concerns.

Rice bran oil is one of the recently emerged candidates in the food oil industry. It is prepared from rice bran, a by-product in the rice processing industry. The rice bran is considered as the most nutritious part of brown rice containing macro and micronutrients, and around 12% oil. The rice bran oil possesses few advantages over the other cooking oils, such as low absorption of oil by foods. The manufacturing of edible rice bran oil involves many stages, and the oil cake finally obtained is used as nutritious feed for cattle.

## Significance of rice bran oil

Rice is one of the major staple food across the globe. The energy demands of a wide population of developing countries are met with rice-based foods. The main parts of paddy during processing are visualised in Figure 1. The paddy after harvest constitutes around 5% bran. During primary processing of rice, bran layers and germ are usually removed and is given as cattle feed without any value addition.

Rice bran contains vitamins (mainly, vitamin E) and other nutrients (such as fibre). Processing of bran for food and feed uses is prospective. Oil from rice bran is less viscous in nature, which facilitates ease removal of oil from foods fried from it. Further, it provides moderate penetration, leaves no stickiness and is allergy-free. Nutritionally, rice bran oil in foods reduce harmful cholesterol, fights diseases and enhance the immune system.

**Figure 1:** Parts of paddy during processing.

Rancidity is a major problem with the oils. However, rice bran oil contains antioxidants which make them store for long periods. Similarly, long stability of oil for frying owing to 'heat-hating' components (such as linoleic acid or omega-6 and alpha-linoleic acid or omega-3).

## Manufacturing of rice bran oil

The manufacturing of rice bran oil involves mainly three stages, viz. preparation of bran, oil expelling, solvent extraction, removal of residual solvent from oil and refining of crude oil. The manufacturing of rice bran oil is presented in Figure 2. The bran obtained during dehusking and polishing of rice is initially cooked and dried. This prepared bran is then squeezed in oil expellers to yield crude bran oil. The oil cake remained in the expeller is extracted for residual oil with a food-grade solvent (hexane). Industrially, solvent extraction is accomplished by moving bed with variable bed height and different speed mechanisms. The oil obtained after distillation process is collected as crude bran oil. The oil obtained is refined to yield different grades.

**Figure 2:** Manufacturing of rice bran oil.

The refining process converts the crude bran oil into edible form. The main steps involved are filtering, neutralization, de-gumming, pigmentation of colour, deodorization, and removal of wax. The refining is conventionally using chemical agents (such as caustic soda for free fatty acids); however, other methods are also employed to retain the nutritional quality of the oil. The quality considerations in the refining of rice bran oil are antioxidant components such as gamma-oryzanol, colour, tocotrienol (vitamin E) and tocopherols.

## Conclusion

Suitable cooking oil for oil-based foods and its reusability is important for ethnic cuisines and fried products. Different regulations in the acceptance and usage of oils available in the market are in existence.

Rice bran oil is newly accepted in the market. The processing of rice bran oil is cost-effective as the raw material is a processing by-product. However, the refining process feasible at small-scale levels that maintain the biochemical quality of the oil needs to be studied. Further, studies on the health effects due to antinutrient in the bran (such as phytic acid) are necessary to ensure its long term use.

## Bibliography

1. Sugano M and Tsuji E. "Rice bran oil and cholesterol metabolism". *The Journal of Nutrition* 127 (1997): 521S-524S.

2. Orthoefer FT. "Rice bran oil". Bailey's industrial oil and fat products (2005).

3. Patel M and Naik SN. "Gamma-oryzanol from rice bran oil–A review". *Journal of Scientific and Industrial Research* 63 (2004): 569-578.