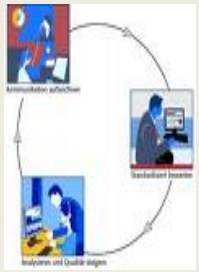
World Food Laws applicable to RBO with Special Reference to Codex Standard.

fssai

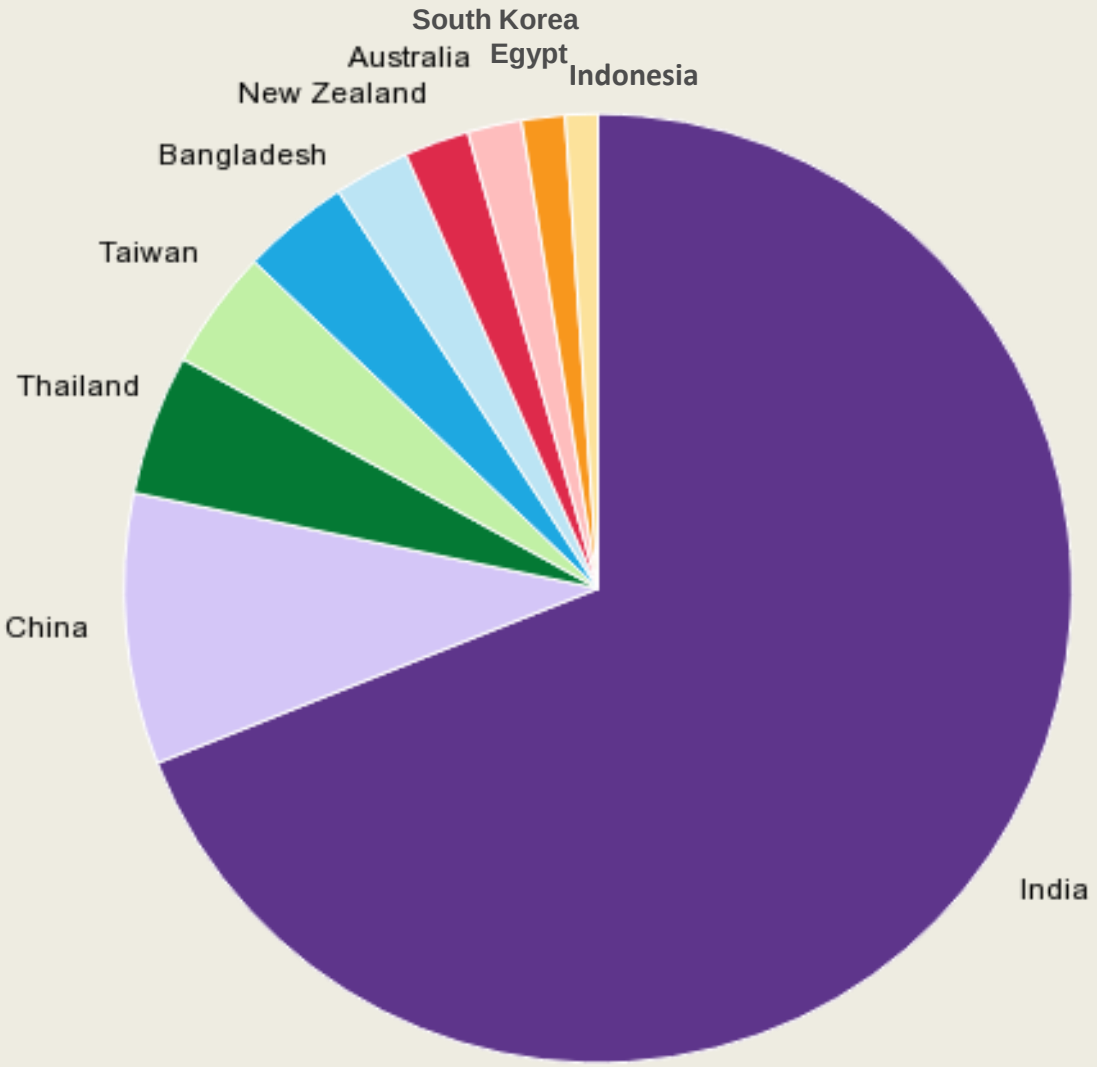


Dr Prabodh Halde
Head –TRA Marico

What is Rice bran oil?

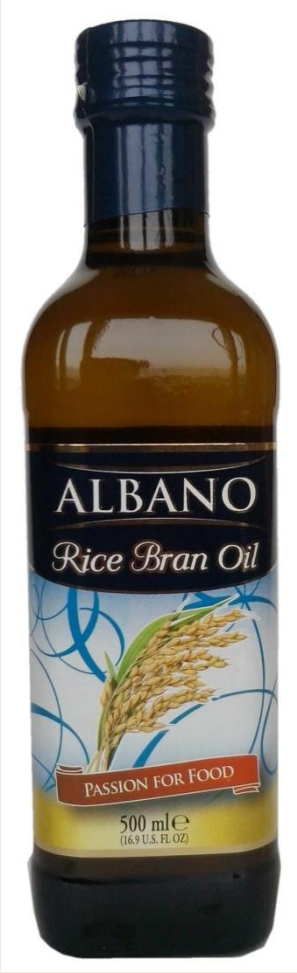
- Rice Bran Oil (RBO) ***is extracted from the middle layer of the husk and the grain.***
- During the milling process, the bran is removed and thrown away to obtain white rice.
- The bran is considered to be the most nutritious part of the rice grain since it is loaded ***with natural antioxidants such as vitamin E, Phytosterols and Gamma-oryzanol.***

Global RBO Production



Country	Variants (% of series)
India	62.75%
China	8.39%
Thailand	4.36%
Taiwan	3.69%
Bangladesh	3.36%
New Zealand	2.35%
Australia	2.01%
South Korea	1.68%
Egypt	1.34%
Indonesia	1.01%
Total Sample	100.0%

GNPD, 2013-2018



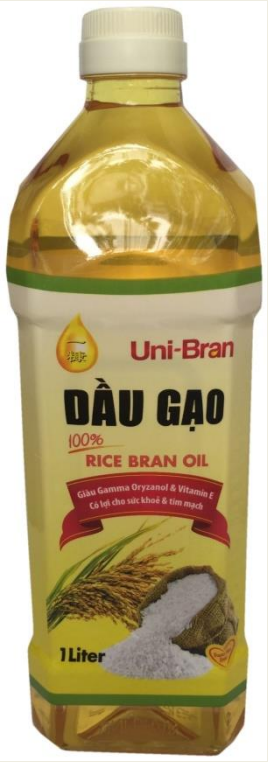
Russia

Bangladesh

Australia

India

China



Vietnam

Thailand

Benefits of Rice bran oil

- ✓ **Rich In Antioxidants:** Due to its High antioxidant content, it fights the free radicals which in turn helps boost the immune system.
- ✓ **For a Healthy Heart:** Rich in heart healthy Oryzanol & unique micro-nutrients which are known to maintain healthy cholesterol levels besides promoting overall health
- ✓ **Natural Anti Ageing:** Rich in Squalene and vitamin E, Which nourishes the skin, making your skin soft and moisturized. This effectively helps delay wrinkle formation and maintains a healthy skin tone.
- ✓ **Rejuvenates Health:** Vitamin E & Ferulic acid helps maintain nervous system and balances the hormonal levels.

Global laws and specification

Specification of RBO

- Japan and India have formulated specifications for RBO, and a Codex Alimentarius Commission standard for the oil also exists.

- Indian and Codex standards indicates a higher unsaponifiable matter content for RBO under both the Indian (3.5%, 4.5%), and the Codex (6.5%) standards specification.

- Processing of the oil (chemical or physical refining) contributes to oryzanol retention, acidity variation, unsaponifiable matter content changes, color variation, and haziness in the refined oil.

Indian Standard (IS 3448:2014)

- India is one of the major rice producing countries of the world, the utilization of rice bran for extracting oil in India is of very recent origin.

- IS 3448 : 2014 prescribes the requirements and the methods of sampling and test for rice bran oil used for edible purposes

Grades of Rice Bran Oil (as per Indian Standard IS 3448:2014)

i) **Refined Grade:** The material of refined grade is suitable for edible purposes.

ii) **Raw Grade 1:** The material here is suitable for making vanaspati and refined oil and not for direct human consumption.

iii) **Raw Grade 2:** The material here is suitable for industrial purposes.

The refined rice bran oil shall be obtained from solvent extracted oil, neutralized with alkali, bleached with earth or activated carbon or both, and deodorized with steam or by other approved refining method. Alternatively, de-acidification, bleaching and deodorization may be done by physical means. The materials shall be clear and free from rancidity, adulterants, sediment, suspended and other foreign matter, separated water and added colouring and flavouring substances.

FSSAI Regulation

- The Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011 states the *Standards for rice bran oil under the regulation 2.2.1 (23)*
- According to this regulations, **RBO shall be sold for human consumption only after Refining.**
- The standards includes characteristics such as moisture, refractive index, saponification value, iodine value, acid value, unsaponifiable matter, oryzanol content and flash point
- Test for Argemone should be negative
- The oil shall not contain hexane more than 5.00 ppm

Japan Regulation

- Production of rice bran is estimated to be 1. 2 million tons in Japan
- The Japan Agricultural Standard (JAS) Act defines two main type of standards, namely- ‘standards for quality’ and ‘standards for quality labelling’
- It includes standards for edible rice oil
- Various characteristics of oil are investigated in order to confirm that the product is edible vegetable oil
- These characteristics includes specific gravity, refractive index, iodine value, saponification value, non-saponifiable material
- With the exception of natural vitamin E, food additives are not used in edible vegetable oil that has the JAS mark. However, this is not true for products to which JAS standards do not apply

Codex Standards

- Codex standards are internationally accepted standards
- Rice bran oil (rice oil) is derived from the bran of rice (*Oryza sativa* L).
- ***CODEX STAN 210-1999*** applies to the vegetable oils for human consumption
- This standard prescribes the essential components and quality factors applicable to vegetable oils, including RBO
- These factors include fatty acid composition (determined by GLC), food additives, contaminants, labelling, hygiene and methods of analysis and sampling
- It also prescribes supplementary quality and composition characteristics for oils
- A product, which meets the essential quality and composition factors but does not meet the supplementary characteristics, may still conform to the standard.

CODEX standard 210:1999 Covers :-

- Scope
- Description
- Essential Composition
- Quality factors
- Food Additives
- Contaminants
- Hygiene
- Labeling
- Methods of analysis & sampling

Quality Parameters

- **Table 1:-** Fatty acid composition of vegetable oils as determined by gas liquid chromatography from authentic samples
- **Table 2:-** Chemical & physical characteristics of crude vegetable oils
- **Table 3:-** Levels of desmethylsterols in crude vegetable oils from authentic samples
- **Table 4:-** Levels of tocopherols and tocotrienols in crude vegetable oils from authentic samples

Challenges of Rice Bran Oil

- Background

- **23rd Session of CodexCodex Committee on Fats and Oils (CCFO) Venue: Langkawi, Malaysia, 25 February – 1 March 2013**
  - US has recommended very narrow standards for fatty acid composition for crude rice bran oil
    India and Thiland opposed the same so committee has recommended India to put discussion paper on same

  24th Session of CodexCodex Committee on Fats and Oils (CCFO) Venue: Melaka, Malaysia 9 – 13 February 2015

  India presented the crude rice bran oil discussion paper

What was the Challenge

- Few country objected to accept the Crude rice bran oil as Edible Oil
- This would have big impact on import duty since it will fall out of food scope
- It was important to put fatty acid composition of Refined Rice Bran oil and Crude rice bran oil

What India did?

- Prepared the Discussion Paper on Crude Rice Bran oil
- The crude rice bran oil is obtained in the solvent extraction process and is subjected to either chemical refining or physical refining to meet the specifications of edible grade vegetable oil. Today when world's demand of oil is increasing, it is necessary to find out the alternate resources of oils and fats. Interest in rice bran oil (RBO) has been growing from the health and nutritional aspects as well as its wide application in industrial use. RBO in its natural state contains several constituents which would potentially provide benefits to health through components like tocopherols and tocotrienols, c-oryzanol, phytosterols, polyphenols and squalene etc. Moreover, RBO has a very good balance in its fatty acid composition i.e. mono-unsaturates to poly-unsaturates/saturates..

Fatty acid Profile of RBO

Fatty acid	Rice bran oil including crude Ricebran oil
C6:0	ND
C8:0	ND
C10:0	ND
C12:0	ND-0.2
C14:0	ND-1.0
C16:0	14-23
C16:1	ND-0.5
C17:0	ND
C17:1	ND
C18:0	0.9-4.0
C18:1	38-48
C18:2	21-42
C18:3	0.1-2.9
C20:0	ND-1.0
C20:1	ND-0.8
C20:2	ND
C22:0	ND-1.0
C22:1	ND
C22:2	ND
C24:0	ND-0.9
C24:1	ND
C18:1t	ND
C18:2 t + C18:3 t	ND

India Proved with 100 samples that Fatty acid profile of Crude Rice Bran oil and Refine drice bran oil is same

What was India's Proposal?

- Proposal :
  - The Committee is invited to consider the proposal to revise Section 3.1, Table 1 of the *Standard for Named Vegetable Oils* (CODEX STAN 210-1999) by including a foot note to clarify that the fatty acid composition of RRBO is also applicable to crude rice bran oil. The project document is attached as Appendix to this document.

Result

- **At 23rd Session of Codex Committee on Fats and Oils (CCFO) Venue: Kuala Lumpur, Malaysia, 27 February - 3 March 2017**
- **India's Agenda has been accepted with support of over 18 countries.**

Way forward

- All Rice bran oil Producing countries should come together and support for rice bran oil agenda

- Our difficulties are unique and thus we should be together

Thank You

Inputs……Questions?

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