DEVELOPMENT OF NATIONAL STANDARD OF RICE BRAN OIL IN VIETNAM

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TCVN/TC/F2 *Animal and vegetable fats and oils*

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Introduction

- Rice is the staple food not only in Vietnam but also in ASEAN countries. As one of the leading rice exporters in the world, Vietnam government is very interested in the sustainable development of rice production and rice products;
- The world production of rice bran oil is approximately 1 – 1.4 million tonnes. The major producing countries are China, India, Japan, Myanmar Thailand and Vietnam. The great number of countries in Asia, Europe, America, and Australia are importers;
- The rice bran oil has a long history of international trade in significant quantities;

- In 2012, the Vietnamese Prime Minister issued Decision No. 439/QD-TTg approving the list of national products under the National Product Development Program from 2012 to 2020, including rice products;
- In 2015, the Prime Minister issued Decision No. 706/QD-TTg approving the Strategy on development of Vietnam's rice brand name;

Introduction *(cont.)*

- Rice oil is a value added product derived from rice bran (the outermost part of the brown rice kernel);
- 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 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 polyunsaturates/saturates;
- Rice oil can be used to fry, make sauces, salad dressings, grilled dishes or replace all other cooking oils.

Introduction *(cont.)*

- As one of the major exporters of rice, Vietnamese enterprises have invested in research and successful production of rice oil from the by-products in the process of processing rice such as Cai Lan Oils and Fats Industries Company (CALOFIC).
- To meet the demands of customers and industry as well as to promote the international trade in terms of this products, School of Biotechnology and Food Technology under Hanoi University of Science and Technology co-operate with CALOFIC propose to elaborate the national standard for Rice bran oil;
- The National Technical Committee TCVN/TC/F2 *Animal and vegetable fats and oils* is Committee to develop TCVN 12107:2017 *Rice bran oils*.

Procedure

- The development process of TCVN **on rice bran oil** complies with the provisions of the Vietnam Law on Standards and Technical Regulations (2006) and the documents guiding the implementation of this Law and in conformity with the guidance of the International Organization for Standardization (ISO), as follows:

(1) Collection of documents, including international standards (CODEX STAN 210-1999, Amended 2015, Revised 2017 *Vegetable oils*); national standards of some countries such as Japan, India, People Republic of China and the results of analysis, research on rice oil samples;

(2) Develop and approve the TCVN project document;

Procedure *(cont.)*

(3) To prepare Technical Committee (TC) draft and Discussion paper;

(4) Gather comments from members of the TC and organize the meeting for adoption of the first draft;

(5) To compile TCVN draft;

(6) To collect comments from related organizations and individuals;

(7) To organize the open meeting to get more comments on draft;

(8) To finalize the draft;

(9) Evaluating the TCVN draft;

(10) Submit and publish the TCVN.

Results

TCVN

TIÊU CHUẨN QUỐC GIA

TCVN 12107:2017

Xuất bản lần 1

DẦU GẠO

Rice bran oils

HÀ NỘI – 2017

Results

- TCVN 12107:2017 was issued by the Minister of Science and Technology in Decision No. 3688/QĐ-BKHCN dated 26/12/2017.
- Main contents of TCVN 12107:2017 include:

Results *(cont.)*

1. Definitions:

(1) Rice oil/rice bran oil: The oil is obtained from rice bran (*Oryza sativa* L.).

(2) Crude rice oil: Rice oils obtained by mechanical processes (for example, pressing or compressing) and/or chemical processes (for example, extraction). It does not change the nature of the oil.

(3) Refined rice oil: Rice oil obtained from crude oil by means of physical or chemical refinement but without altering the original glyceryde structure.

Results *(cont.)*

2. Requirements for raw materials:

(1) Rice bran: clean, suitable for rice oil production.

(2) Extraction solvent (if used): the type used in food processing.

Results *(cont.)*

3. Specification of technical requirements for rice oil products:

(1) Organoleptic requirement:

color from light yellow to dark brown;

There is no strange smell, liquid, clear, flexible, slightly water-soluble.

(2) Determination of fatty acid content by gas chromatography only for refined rice oil.

(3) Gamma oryzanol content: in the range of 0.9% to 2.1% by volume for crude rice oil and at least 0.3% by volume for refined rice oil.

Results *(cont.)*

(4) Physical and chemical indicators:

For crude oil, the relative density index (at 20ºC), the refractive index (at 40ºC), the content of unsaponifiables (g/kg), saponification value (mg KOH/ g oil) and ivy value [Wijs];

For refined rice oil, the relative density index (at 20ºC), refractive index (at 40ºC), volatile matter content (at 105ºC), insoluble matter, soap content, acid value (mg KOH/g oil), peroxide value (active meq per kg of oil), iron content and copper content.

Results *(cont.)*

(5) Identification characteristics of crude rice oil, including:

content of desmethylsterol (cholesterol, brassicasterol, campesterol, stigmasterol, beta-sitosterol, delta-5-avenasterol, delta-7-stigmastenol, delta-7-avenasterol, other substances and total sterol content);

content of tocopherol and tocotrienol.

Results *(cont.)*

4. Requirements for food safety:

(1) Food additives: provisions for flavouring, antioxidants, antioxidant synergists and anti-foaming agents.

(2) Contaminants:

+ regulations on limiting heavy metals (lead and inorganic arsenic)

+ refer regulations on residues of pesticides, microorganisms and mycotoxins in accordance with current regulations.

Results *(cont.)*

5. Testing and sampling methods:

- TCVN 12107: 2017 specifies:

+ sampling according to TCVN 2625 (ISO 5555) *Animal and vegetable fats and oils – Sampling* and

+ preparation of test sample in accordance with TCVN 6128 (ISO 661) *Animal and vegetable fats and oils – Preparation of test sample*.

- The test methods are based on TCVN/ISO standard, the method of gamma oryzanol determination is based on CODEX STAN 210.

Results *(cont.)*

6. Requirements for packaging, labeling, preservation and transportation:

(1) Packaging:

Rice oil must be stored in a clean, dry, covered container.

The container material must ensure food safety, not affect the quality of rice oil and the health of the user.

Results *(cont.)*

6. Requirements for packaging, labeling, preservation and transportation:

(2) Labeling:

Labeling according to TCVN 7087:2013 (CODEX STAN 1-1985 with Amendment 2010) *Labelling of prepackaged foods*;

Labeling of packaging not for retail sale: In addition to the name of the product, identification of the lot, the name and address of the producer or pack house must be indicated on the label, the information for the package not used for sale. These must also be indicated on the label or in the accompanying documents.

Results *(cont.)*

6. Requirements for packaging, labeling, preservation and transportation:

(3) Storage: Rice oil must be stored in a clean place, avoid direct sunlight.

(4) Transportation: Rice oil must be transported by clean, hygienic means.

Results *(cont.)*

- TCVN 12107:2017 is an important reference document for rice producers not only to meet the need of management by authorities but also to facilitate the trade of this product.

Thank you!