

Quality standards for virgin coconut oil, coconut water based vinegar and spray dried coconut milk powder

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Introduction

World Declaration on Nutrition” International Conference on Nutrition explicitly states that “Access to nutritionally adequate and food is the right of each individual”. Therefore, the foods and trade, both domestic and international, must meet certain consumer demands and address consumer concerns. Of primary importance is the assurance that the supply is safe, wholesome and nutritious. Consumers expect food to be honestly labelled and packaged. Governments, through their food control system ensure appropriate level of protection by setting limits for pesticide residues, dyes, toxins, toxic metals, and other chemical hazardous contaminants and additives.

India, under the Ministry of Health & Family Welfare, we have enacted Food Legislation called Prevention of Food Adulteration Act, 1954 & rules thereof which has set standards for various food commodities to ensure quality and safety. Apart from this, agencies

responsible for agricultural commodities and processed food products.

Quality Standards

Quality standards prescribed for any product, basically ensure safety and quality of that product, besides ensuring the identity and purity characteristics. In most cases, the food standards, guidelines, codes of practice and other recommendations by the standard setting agency are based on the principles of sound scientific analysis and evidence, involving thorough review of all relevant information based on risk analysis, in order that the standards ensure the quality and safety of the food supply.

While elaborating and deciding upon food standards, other legitimate factors relevant for the health protection of consumers and promotion of fair trade practices in food trade have to be borne in mind. ‘Food Labelling’ on ingredients used, date of manufacture, and nutrient content is another factor that the consumer always looks into. Quality standards set by PFA, BIS, and AGMARK in India and Codex Alimentarius Commission (CAC) in

I. Standards for Virgin Coconut Oil (VCO):

- a. *Prevention of Food Adulteration Act, (PFA):* No standards for VCO have been specified by PFA. Rule No.17.01 of PFA covers standards only for coconut oil

Definition :

Obtained from fresh, mature kernel of the coconut, by mechanical or natural means, with or without the use of heat, without undergoing chemical refining, bleaching or deodorizing and which does not lead to the alteration of the nature of the oil.

PFA has not specified any standards for VCO

A 17.01 covers standards only for coconut oil

BRR at 40°C	34.0 to 35.5
R.I at 40°C	1.4481 – 1.4491
S.V	Min. 250
I.V	7.5 to 10.0
Acid Value	Max. 6.0
Polenske value	Min. 13.0
Unsap. Matter	Max. 1.0

May contain permitted antioxidants and antifoaming agents permitted under Appendix C.

- b. *Bureau of Indian Standards (BIS) & AGMARK* have prescribed standards for Refined Grade – I and Grade – II for coconut oil and have not made any reference to Virgin Coconut Oil in their standards.

c. *Philippine National Standard*

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c. Philippine National Standard

Definition :

Obtained from fresh, mature kernel of coconut, by mechanical or natural means, with or without the use of heat, without undergoing chemical refining, bleaching or

deodorizing and which does not lead to the alteration of the nature of the oil.

Quality Specifications :

Chemical: 0.2% free fatty acids (FFA), 0.2% moisture content, 3 meq/kg oil peroxide value, no permitted food additives, 0.2% contaminants, heavy metals (5.0 – 0.1 mg/kg).

Sensory: No pungent off-flavor, no sour taste or smell, no rancid taste or smell, no artificial taste, no change in color, no soapy taste, no taste of metal.

d. Codex Alimentarius Commission: Food Category System 02.1.2 covers Vegetable Oils and Fats

Codex – STAN 210 – 1999 covers standards for coconut oil:

Description :

Coconut oil is derived from the kernel of the coconut (*Cocos nucifera L.*).

Other Definitions :

Edible vegetable oils are foodstuffs which are composed primarily of glycerides of fatty acids being obtained only from vegetable sources. They may contain small amounts of other lipids such as phosphatides, of unsaponifiable constituents and of free fatty acids naturally present in the fat or oil.

Virgin oils are obtained, without altering the nature of the oil, by mechanical procedures, e.g., expelling or pressing, and the application of heat only. They may have been purified by washing with water, settling, filtering and centrifuging only.

Cold pressed oils are obtained, without altering the oil, by mechanical procedures only, e.g., expelling or pressing, without the application of heat. They may have been purified by washing with water, settling, filtering and centrifuging only.

e. Asian & Pacific Coconut Community (APCC) standards for virgin coconut oil

Description :

Coconut oil is derived from the kernel/meal/copra of the coconut (*Cocos nucifera L.*). Virgin coconut oil is obtained from the fresh and mature kernel of coconut by mechanical or natural means with or without the application of heat, which does not lead to alteration of the oil. Virgin coconut oil is suitable for human consumption in its natural state.

Food Additives :

None permitted.

Hygiene :

It is recommended that the product be prepared in accordance with the GMP and HACCP standards.

Labelling :

The name of the food on the label shall be 'Virgin Coconut Oil'. The provisions of the General Standard for the labeling of Prepackaged Food shall apply. (CODEX STAN 1-1985 Rev. 1-1991)

Methods of Analysis and Sampling:

Based on Codex Alimentarium (Volume 13).

II. Standards for Coconut Water Based Vinegar

(1) PFA: Rule No. A.20 of PFA

Standards for virgin coconut oil

Essential Composition and Quality Factors VCO	APCC Standards
Identity Characteristics	
Relative density	0.915 – 0.920
Refractive index at 40°C	1.4480 – 1.4492
Moisture % wt. max.	0.1 – 0.5
Insoluble impurities per cent by mass max.	0.05
Saponification value	250 – 260
Iodine value	4.1 – 11.00
Unsaponifiable matter % by mass. Max.	0.2 – 0.5
Acid value max.	0.5
Polenske value min.	13
GLC Ranges of Fatty Acid Composition (%)	
C 6:0	0.4 – 0.6
C 8:0	5.0 – 10.0
C 10:0	4.5 – 8.0
C 12:0	43.0 – 53.0
C 14:0	16.0 – 21.0
C 16:0	7.5 – 10.0
C 18:0	2.0 – 4.0
C 18:1	5.0 – 10.0
C 18:2	1.0 – 2.5
C 18:3 – C 24:1	< 0.5

has prescribed the following standards for Brewed Vinegar.

Product Description

Brewed vinegar a product obtained by alcoholic and acetic acid fermentation of any suitable medium such as fruits, malt (brewed exclusively from malted barley or other cereals, molasses, jaggery, sugar cane juice etc. with or without addition of caramel and spices. It shall not be fortified with acetic acid.

(2) Codex FCS 12.3.

STAN 162-1987 prescribes standards for Vinegar

Description :

Vinegar is a liquid, fit for human consumption, produced exclusively from suitable products containing starch or sugars or starch and sugars by the process of double fermentation, alcoholic and acetous, (as further defined in Section 2.1.1.1 to 2.1.1.8).

Vinegar contains a specified amount of acetic acid. Vinegar may contain optional ingredients in accordance with Section 3.2.

III. Standards for Coconut Milk Powder (CMP):

Quality standards for spray dried coconut milk powder have not been set by Codex Alimentarius Commission or PFA or BIS. For

setting standards for any new product, large number of samples collected from different regions, need to be tested for physico-chemical and micro biological parameters. Based on the literature survey, the following standards may be tentatively prescribed:

Coconut milk powder

Description :

Coconut milk powder is a creamy white, free-flowing spray dried powder with characteristic exotic flavour and aroma of fresh coconut.

Ingredients / additives :

Maltodextrin, Sodium caseinate and Trisodium Phosphate added to extracted milk to help to convert a high fat material through spray-drying into flowable and cohesive powder through encapsulation of fatty substances.

Monostearate and tocopherols may be added.

Hygiene :

The product may be prepared in accordance with GMP and HACCP standards.

Labelling :

The provisions of General

Composition of Coconut Milk Powder (Suggested)

Moisture, % by Wt.	Max: 2.5
Fat, % by wt.	Min: 60.0
Free fatty acid (as oleic acid), % by wt.	Max: 0.15
Protein, % by wt.	4.0
Carbohydrates (by diff.), % by wt.	Min: 20.0
Ash, % by wt.	Max: 2.0
Crude fibre, % by wt.	Max: 0.5

Microbiological Quality: (Suggested)

Standard plate count.	Max: 5000/gm
Yeast count.	Max: 50/gm
Mould count.	Max: 50/gm
Coliform count.	Max: 10/gm
Salmonella.	Absent in 25 gms.
Pathogenic E-coli.	Absent in 10 gms.



Standard for Labelling of Prepackaged Food may apply. (Codex STAN 1-1985, Rev. 1 – 1991).

1 Using a significant amount of separated, whole, disintegrated, macerated or comminuted fresh endosperm (kernel) of coconut

4 Combining (1) and (2) above.

Processed by heat, in an appropriate manner, before or after being hermetically sealed in a container, so as to prevent spoilage.

Codex Standard for aqueous coconut products composition

Product	Total Solids (% m/m)	Non-fat Solids (% m/m)	Fat (% m/m)	Moisture (% m/m)	pH Min.
	Min. – max.	Min.	Min.	Max.	
(a) Light coconut milk	6.6 – 12.6	1.6	5.0	93.4	5.9
(b) Coconut milk	12.7 – 25.3	2.7	10.0	87.3	5.9
(c) Coconut cream	25.4 – 37.3	5.4	20.0	74.6	5.9
(d) Coconut cream concentrate	37.4 min.	8.4	29.0	62.6	5.9

Reference

Gonzalez, O.N. (1986) State of the art: Coconut utilization for food. Paper presented at the Philippine Coconut Research and Development Foundation (PCRDF) Planning Workshop, July 3-4 1986, Los Banos, Philippines.

Seow, C.C. & Leong, K.M. (1988) Development and physical characterization of artificial coconut milk (*santan*) powder, *Food Science and Technology in Industrial Development*, vol.1 (edited by S. Maneeapun, P. Varangoon & B.Phiithakpol). Pp.54-60. Bangkok

Paper presented in the workshop on Quality Standards in Coconut Industry held at Bangalore in October 2006

Packaging :

The product may be packed in can or flexible laminated aluminium bags.

IV.Codex Standard for Aqueous Coconut Products – Coconut Milk and Coconut Cream – 240 - 2003

Coconut milk and coconut cream are the products. It is prepared by :

palm and expelled, where most filterable fibers and residues are excluded, with or without coconut water, and /or with additional water; or

2 Reconstituting coconut cream powder with potable water; or

3 Dispersing finely comminuted dehydrated coconut endosperm with potable water; or

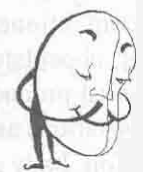
INDIAN CASHEWS
Health in a Nut Shell



Food trends everywhere are evolving with a marked nutritional orientation. Acclaimed as one of the healthiest and most nutritive edible nuts in the world, Indian cashew, the world's favourite snack, is fast getting into many international cuisine.

With minimal saturated fat, cashew is a zero-cholesterol nut. It is reputed to be good for the heart and liver, besides being helpful in arresting certain types of cancer. With its unique combination of carbohydrates, minerals, proteins and vegetable fats which are nutritionally valuable, Indian cashew provides a tasty, healthy, high-energy food.

India, the world's largest processor & exporter of cashew and cashew products, is capable of supplying this wonderful nut and its by products like cashewnut shell liquid, etc. in any quantity and quality, at any time, to any country. **India's annual export exceed Rs.2000 crores**



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