CODEX ALIMENTARIUS COMMISSION E

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DISCUSSION PAPER ON THE DEVELOPMENT OF A STANDARD FOR GALIP NUT

(prepared by Papua New Guinea)

PROPOSED DRAFT CODEX STANDARD FOR GALIP NUT (*CANARIUM INDICUM*) CODEX STANDARD xxx xxx

1. INTRODUCTION

Galip nut (*Canarium indicum*) belongs to Kingdom *Plantae*, Phylum *Magnoliophyta*, Class *Magnoliopsida*, Order *Sapindales*, Family *Burseraceae*, Genus *Canarium*, and species *canarium indicum*. Genus *Canarium* has 75 species of tropical and subtropical trees. It is widely distributed in lowland areas on the northern side of New Guinea and in all island groups. *C. indicum* grows near villages, in woody regrowth after cultivation and in mature forest. Trees are usually dispersed and not grown in groves. Self-sown seedlings are protected and trees are planted, often being selected for desirable characteristics.

C. indicum grows from sea level to 700m altitude and in locations with a wide range in rainfall from 2000 to 6000mm / year. It occurs on both well drained and poorly drained sites in forest locations but is uncommon in grasslands.

The production is typically seasonal and generally lasts for about three months. The production pattern is independent of the rainfall pattern but the commencement of production varies with latitude, which suggests that it is determined largely by day length. Anecdotal evidence suggests that there is considerable genetic variation within the species in Papua New Guinea (PNG). *C. indicum* is popular among outsiders, including expatriates, and the prospects for its commercial development are considered to be excellent. It is also cultivated in other parts of the Pacific Island Countries (PICs) including Solomon Islands and Vanuatu. It is a crop with high potential of economic importance for the PICs.

1.1 SCOPE

1.1.1 This standard applies to the galip nut products as defined in Section 2 below and offered for direct consumption, including for catering purposes or for repacking if required. It also applies to the product when indicated as being intended for further processing (e.g., oil extraction). This standard applies to galip nut products used as a food or food ingredient.

1.2 This Standard applies only in those jurisdictions where products defined in 2.1 are regulated as foods.

2. DESCRIPTION

2.1 PRODUCT DEFINITION

The compulsory ingredient of galip nut product is fresh or dried galip nut (*Canarium indicum*) cultivated for commercial purposes and used for food or food ingredient.

The word “galip nut” refers to the plant species *Canarium indicum* and/or to the plant’s nuts.

“Galip nut varieties are those having a certain chemical composition adequate for daily consumption and used for food over the years.

The common name in the Pacific is *canarium* nut. In Papua New Guinea it is known as galip nut and also referred to as *lawele* (New Britain) and *biuei* (New Ireland). In Solomon Islands it is commonly known as *ngali* nut (Kwara'ae), *angari* (Santa Ana), *ngari* (Kausage/Simbo and Varisi), *ngoeta* (Marovo), *nolepo* (Garciosa Bay), *nyia nyinge* (Ayiwo), and other names in other parts of Solomon Islands. In Vanuatu it is known as *nangai* in local Bislama. *Nanae* (Santo Island), *nige karia* (Epi Island) and other name in other Islands.

Noble galip nut varieties are type variety *indicum* and variety *platycerioideum*. The latter variety is uncommon variety and is located in West Papua (Indonesia) and it has large leaves and fruits.

The galip nut is the plant part that is suitable for consumption. The galip nut trees are organically cultivated.

Non noble galip nut varieties cannot be sold for consumption.

The galip products offered for direct consumption refer to galip nut that can be used and traded for direct consumption or food ingredient:

The stems, leaves, bark and roots are excluded from this definition and their use must be avoided.

Galip nut products or ingredients should be packaged in such a manner as to safeguard the hygienic, nutritional, technological and organoleptic quality of the products.

2.2 TYPES OF GALIP NUT PRODUCTS

2.2.1. Fresh Galip Nut

"Fresh galip nut" may be classified into one of such product types that have the outer coat removed. The product types are thoroughly cleaned by rinsing with water to remove soil residues.

2.2.2 Dried Galip Nut

"Dried galip nut" is the by-product as a result of drying fresh galip nuts in sun dried or hot air dried or dried using other recognized methods. The product may be classified into one of such product types that have the shell removed for drying.

2.2.3 Galip Nut Ingredients

Galip nut ingredients are manufactured when soluble components of dried galip nuts are used in the mixture and then filtered and concentrated. This product has a brown colour and a high viscosity when much of the water is removed from it. The product may be also presented as a powdered type through spray- or freeze-drying.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 INGREDIENTS

Fresh or dried galip nuts as defined in Section 2.1.

3.2 QUALITY FACTORS

Galip nut products shall have normal flavour, colour, taste unique to noble galip nut as well as be free from foreign matters. The content of galip nut is indicative for quality of galip nut.

3.2.1 FRESH GALIP NUT

(a) Colour: Galip nut products have a characteristic light brown/grey colour.

(b) Aroma: Galip nut products have the aroma characteristic of the product.

(c) Foreign matter: Using standard methods foreign materials such as residues will not exceed 2% of dry weight.

(d) Moisture: In raw *Canarium indicum* nut the moisture content is 35.4% in 100g. In dry galip nut kernel the moisture content will be between 1.5 to less than 5% and not exceeding 12.5% when adequately sun drying of nuts. For processed galip nut it should be dried to at least 2.8%.

(e) Protein: Raw galip nut has high protein of 8.2% when eaten fresh. The roasted or smoked galip nut is in between 8.2-14.2%.

(f) Ash: The raw *canarium indicum* has ash content of 2.6g in every 100g of food composition.

(g) Starch: raw *canarium indicum* has starch content of 0.3-5.5g.

(h) **Calcium**: raw *canarium indicum* has calcium content of 44-119g.

(i) Oil content: Canarium indicum nut has oil content of 45.9-74.9%.

(j) Others include: Fibre 3.2g/100g, Energy 2705kJ/100g, Iron 3g/100g, Carotene 27ug/100g, Thiamin 950ug/100g, Riboflavin 120ug/100g, Niacin 400ug/100g, Saturated 36.6g/100g, Monosaturated 28.5g/100g and Polysaturated 10.3g/100g.

(k) Heavy metals: the information on limits for Cadmium, Mercury and Aflatoxin ppm are not available at this stage.

3.2.2 PROCESSED GALIP NUT

(a) Roasting: Roasting at 100^{o}C to 120^{o}C for one to two hours at 135^{0}C for 55minutes in a forced air oven.

(b) Drying of processed nut: It is processed at 55^{o}C for eight hours in a cabinet dryer.

(c) Cooling: Cooling is carried out in a dry environment. It has to be cooled at the ambient temperature before packing. When the product is hot water continue to vaporize.

(d) Product packaging: packaging is very important for generating and expanding snack food sales. Packaging protects food and extend self-life, promote the product (name, origin, use by date, etc).

(e) Colour: Galip nut extracts have a characteristic brown colour.

(f) Aroma: Typical of galip nut.

(g) Heavy metals: Further work has to be done on the limits for Cadmium, mercury and aflatoxins at ppm level.

(h) Toxicity: Further work information and studies are required to determine toxicity on galip nut products.

3.2.3 PROXIMATE ANALYSIS

Moisture content was determined by Australian Official Analytical Chemists International (2000)-AOAC 925.40), fat (AOAC 948.22-a), protein (AOAC 950.48), ash (AOAC 950.49-A) and sugar (AOAC 32.2.07. Total carbohydrate and energy were calculated in accordance with Food Standards Australia New Zealand (FSANZ) 1.2.8.1.

Fatty acid profiles of galip nut oil (100mg) were obtained by preparing fatty acid methyl esters (FAMES) using the ISO International Organizations for Standardization (2000) Animal and Vegetable fats and oils, standard No 5509. Clause 5.0, ISO, Geneva, Switzerland.

3.3 DEFINITION OF DEFECTS

The following defects shall be applied to the dried galip nut.

(a) ***Insect-damaged galip nut***: Galip nut that is visibly damaged by insects or contains dead insects, and

(b) ***Mouldy galip nut***: Galip nut that is visibly affected by mould.

3.4 CLASSIFICATION OF "DEFECTIVES"

A container that fails to meet one or more of the applicable quality requirements, set out in Sections 3.2 and 3.3, shall be considered as been "defective".

3.5 LOT ACCEPTANCE

A lot can be considered as meeting the applicable quality requirements referred to in Sections 3.2 and 3.3, when the number of "defectives", defined in Section 3.4, does not exceed the acceptance number (c) of the appropriate sampling plan.

4. FOOD ADDITIVES

After removal of testa, the nuts can be flavoured. Trials need to be conducted for different flavours with different target groups, but plain roasting and salting have done very well. Soaking in 4% salt solution gives the desired salted flavour and facilitate testa removal but favouring should be dictated by market feed-back.

5. CONTAMINANTS

The products covered by this Standard shall comply with the maximum levels of the *Codex General Standard for Contaminants and Toxins in Foods* (CODEX/STAN 193-1995).

The products covered by this Standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

6. HYGIENE

6.1 It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *Recommended International Code of Practice - General Principles of Food Hygiene* (CAC/RCP 1-1969), and other relevant Codex texts, such as Codes of Hygienic Practice and Codes of Practice.

6.2 The products should comply with any microbiological criteria established in accordance with the *Principles for the Establishment and Application of Microbiological Criteria for Foods* (CAC/GL 21-1997).

7. WEIGHTS AND MEASURES

Weights and measure should be expressed in SI units. The fill of container weight, measure of count of units determine by appropriate method of analysis and sampling. There has been work done in the Solomon Islands, Vanuatu and Papua New Guinea on this area, however it has to comply with the Codex Standards on Method of Analysis and Sampling (**See Point 10 below**) with respect to processing of nuts.

8. LABELLING

The products covered by this Standard shall be labelled in accordance with the *Codex General Standard for the Labelling of Pre-packaged Foods* (Codex STAN 1-1985). In addition, the following specific provisions apply:

8.1 NAME OF THE PRODUCT

The name of the products defined in subsections 2.2.1. 2.2.2, and 2.2.3 shall be *"Galip Nut", "Dried Galip Nut", or "Processed Galip Nut"*, respectively.

All galip nut products shall be labelled with the scientific name of galip nut and with the name of the galip nut variety that is used as raw material. The common names of the galip nut shall be declared in accordance with the law and custom of the country where the product is consumed, in a manner not to mislead the consumer.

The village of cultivation and the island of origin as well as the product type (dry nut, processed nut) must appear on the labels and the bags.

8.2 COUNTRY OF ORIGIN

The country of origin of the product and/or raw material shall be declared.

9.0 LABELLING OF NON-RETAIL CONTAINERS

Information about non-retail containers shall be given on the container or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer, packer or distributor, as well as storage instructions, shall appear on the container. However, lot identification, and the name and address of the manufacturer, packer or distributor may be replaced by an identification mark, provided that such a mark is clearly shown in the accompanying documents.

9.1 OTHER LABELLING REQUIREMENTS

Labelling must conform to the requirements according to Good Agricultural Practise (GAP), Good Manufacturing Practice (GMP) especially with respect to traceability of the plant material. This section should include all labelling provisions contained in the standard Provisions should be included by reference to the General Standards for the Labelling of Pre-packaged (CODEX STAN 1-1985); the specified name of the food; date marking and storage instructions.

10. METHODS OF ANALYSIS AND SAMPLING

10.1 DETERMINATION OF MOISTURE

According to AOAC 925.45.

10.2 DETERMINATION OF SOLID

According to AOAC 925.45 and calculated by subtracting the content of water from 100%.

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10.3 DETERMINATION OF ASH

According to AOAC 923.03.

10.4 DETERMINATION OF GALIP NUT

According to the method described in Annex A (CODEX STAN 295R-2009)

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