



## JOINT FAO/WHO FOOD STANDARDS PROGRAMME

### FAO/WHO COORDINATING COMMITTEE FOR NORTH AMERICA AND THE SOUTH WEST PACIFIC

14<sup>th</sup> Session, Port Vila, Vanuatu

19 – 22 September 2016

#### PROPOSED DRAFT REGIONAL STANDARD FOR FERMENTED NONI JUICE

Comments at Step 3 submitted by Australia, New Zealand and the United States of America

#### AUSTRALIA

##### General Comments

The standard could be improved by incorporating sampling plan(s) for all the quality factors listed in Section 2.3. The sampling plans need to be specified based on the commodity and how the product is traded e.g. isolated lots or a continuous series of lots.

Further information can be found in the *General Guidelines on Sampling* (CAC/GL 50-2004), section 3.1, where for qualitative/quantitative characteristics/sensory inspections consideration should be given to an Inspection by attributes using a Limiting Quality (LQ) for isolated lots, or an inspection level plus Acceptable Quality Level (AQL) for a continuous series of lots.

For the methods provided in Appendix A and B; some method performance data is provided in the referenced text, however acceptance may also be enhanced by undertaking an international collaborative trial using these methods for Fermented Noni Juice. This would support the validity of the methods and ensure consistency in outcomes between trading partners of Fermented Noni Juice.

##### Specific Comments

**Comment:** Addition of section on Lot Acceptance.

##### Lot Acceptance

**A lot can be considered as meeting the applicable quality requirements referred to in Sections 2.2 when the number of “defectives”, defined in Section 2.4, does not exceed the acceptance number of the appropriate sampling plan.**

#### 8. METHODS OF SAMPLING AND ANALYSIS

##### 8.1 DETERMINATION OF MOISTURE

According to AOAC 925.45.

**Comment:** This method is for Loss on Drying (Moisture) which lists four techniques for different applications. The specific technique needs to be specified. Australia would suggest AOAC 925.45D.

An alternative suggestion is that the parameter is changed from “Moisture 90-96.7%” to “Total Dry Matter 3.3-10%”, then the following method would be applicable: **Determination of Total Dry Matter (vacuum-oven drying at 70°C); EN 12145.**

##### 8.2 DETERMINATION OF ASH

According to AOAC 940.26.

**Comment:** To limit any confusion Australia suggest AOAC Method 940.26A is specified.

##### 8.3 DETERMINATION OF BRIX-SOLUBLE SOLIDS

**Comment:** This parameter is normally expressed as “Soluble solids” with a method principle “Indirect by refractometry”.

Australia suggest method: **ISO 2173: 2003.**

##### 8.4 DETERMINATION OF pH

**Comment:** Australia suggest method: **Determination of pH-value: ISO 1842: 1991.**

8.5 DETERMINATION OF ACIDITY TITRATABLE ACIDITY

**Comment:** This parameter is normally expressed as “Titratable Acidity”.

Australia suggest using method: **AOAC Method 942.15**

8.6 DETERMINATION OF ETHANOL

**Comment:** Australia suggest method: **Determination of Alcohol (ethanol) - ISO 2448:1998**

8.47 IDENTIFICATION OF SCOPOLETIN8.58 IDENTIFICATION OF DEACETYLASPERULOSIDIC ACID

Annex A

Identification of SCOPOLETIN

2.1 A standard is prepared by dissolving 1 mg scopoletin **reference standard** in 1 millilitre of methanol.

**Comment:** Delete para 2.2

**Rationale:** Australia recommend deleting paragraph 2.2, as while it is a recommendation by West BJ, Deng S<sup>1</sup>, we are concerned about the commercial availability and thus access to a ‘true’ certified Morinda citrifolia reference plant material, and there could be confusion with certified ‘organic’ products available in the market but which do not provide chemical traceability.

Annex B

Identification of DEACETYLASPERULOSIDIC ACID

2.1 A standard is prepared by dissolving 1 mg deacetylasperulosidic acid **reference standard** in 1 millilitre of methanol.

**Comment:** Delete para 2.2

**Rationale:** Australia recommend deleting paragraph 2.2, as while it is a recommendation by West BJ, Deng S<sup>1</sup>, we are concerned about the commercial availability and thus access to a ‘true’ certified Morinda citrifolia reference plant material, and there could be confusion with certified ‘organic’ products available in the market but which do not provide chemical traceability.

**NEW ZEALAND****General Comments**

New Zealand recognises the interest of the PICs in this product and is supportive of the development of a regional standard for fermented noni fruit juice.

There are however some significant issues with the draft standard. For example the scope of the draft standard is not clearly defined. At times it is unclear whether it is intended as a standard for the fruit, the juice or the fermented product. Some of the comments made on the previous draft, as noted in REP15/NASWP, appear not to have been incorporated, and some of our comments below reiterate these points. We consider this work would greatly benefit from some further technical input, particularly from food technology/food science perspectives).

We do not believe this draft standard is ready for advancement to Step five.

**Specific Comments**

Scope

The scope refers to “products”. Does this refer to, for instance, products such as sweetened, concentrated or carbonated fermented noni fruit juice? Only the plain product is mentioned.

The reference should be “Section 1”.

Description

## 1. Product Definition

The phrase “suitable processes that maintain its essential physical, chemical, organoleptic and nutritional characteristics” is not clear. Does the pronoun “its” refer to the raw fruit or the fermented fruit? Does “suitable

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<sup>1</sup> West B.J., Deng S. ‘Thin Layer Chromatography Methods for Rapid Identity Testing of Morinda citrifolia L. Fruit and Leaf’; Advance Journal of Food Science and Technology 2(5): 298-302, 2010.

processes” refer to fermentation – which would alter the essential characteristics of the fruit – or pasteurisation?

## 1.1 Noni Fruits

### 1.1.1 Fermentation Noni Fruit Juice

The heading should include “of”.

This clause should explain whether a starter culture is used. If it is, it should be listed as an ingredient.

The second sentence does not need to be stated as it explains something not included in the standard.

The processing steps don't need to be explained, only the defects, which are listed in 2.4. However pasteurisation appears to be an essential step and should be written into the main text of the standard for clarity.

## 2.1 Ingredients

The reference should be section 1.

## 2.2 Quality Factors

These requirements would be appropriate for a standard for noni fruit in trade, but seem over-detailed for this standard. Section 1.1 seems sufficient.

## 2.3 Fermented Noni Fruit Juice

Brix levels are usually measured in fruit or juice to assess the ripeness or sugar content. Does the range specified here apply to the fruit or to the fermented product?

The acidity range should state which acid it is expressed as.

The ethanol figure should state whether it is minimum or maximum.

Extraneous materials are mentioned in 1.1.1 and 2.4. Should a limit be included?

## 2.4 Definition of Defects

This section should be more explicit, along the lines of “A defective product is one which fails on points x, y or z.”

## 2.5 Food Additives

According to the *General Standard for Food Additives*, food category 14.1.2.1 applies to “unfermented” fruit juices. Either CCFA will need to be requested to amend the description of this category, or this standard should refer to a different category.

## 4. Hygiene

The *Code of Hygienic Practice for Fresh Fruits and Vegetables* is intended to avoid microbiological contamination in fresh fruit and vegetables for sale as such. It doesn't seem appropriate here.

## 5. Packaging

The *Code of Practice for Aseptically Processed and Prepackaged Low Acid Food* applies to aseptic packing of sterile products with pH > 4.6. It doesn't seem appropriate here.

### 6.1.1 Minimum Fill

It is not clear whether OIML R87 is intended to be part of the standard.

### 7.1 Name of the Product

The name as stated here does not include the word “fruit” as in the title and elsewhere in the standard.

### 8.1 Determination of Moisture

AOAC 925.45 is a method for loss on drying (moisture) in sugars. It's not clear that it's appropriate for this product.

### 8.3 Identification of Scopoletin and 8.4 Identification of Deacetylasperulosidic Acid

The methods will identify the substances, but not determine whether the level is above the specified level.

## **UNITED STATES OF AMERICA**

### **General Comments**

The United States believes that progress has been made on the draft standard, however additional work still remains. At the 2014 Session of CCNASWP, the Committee agreed to request advice from the Codex Committee on Contaminants in Food (CCCF) on the safe level of scopoletin. The 9<sup>th</sup> Session of CCCF (2015) included the new proposal on “Scopoletin - full risk assessment with a view to advise CCNASWP in their development of a standard for noni juice” on the *Priority List of Contaminants and Naturally Occurring Toxicants Proposed for Evaluation by JECFA*. At this time, scopoletin is on the priority list but has not been scheduled for a risk assessment. We encourage countries with information and data on scopoletin toxicity/safety to apprise JECFA and CCCF of the availability of this data at the 11<sup>th</sup> CCCF.

Given that this is a regional quality/commodity standard, perhaps JECFA analyses/CCCF MLs are not needed to establish this standard at Step 5. Perhaps a way forward would be to not include a numerical limitation for scopoletin in the standard at this time, but to postpone adoption of a final standard until the JECFA risk assessment is complete. If an ML is ultimately established, it would be included the Codex General Standard for Contaminants and Toxins in Food and Feed (GSCTFF) and a general reference to the GSCTFF would be included in the section on contaminants of this draft standard at that time.

### **Specific Comments**

#### **1. Product Definition:**

“The fermented noni fruit juice is derived from the fermenting of fresh fruits of noni plants, *Morinda citrifolia* L. variety *citrifolia* of the Rubiceae family, with suitable processes that maintain its essential physical, chemical, organoleptic and nutritional characteristics.

#### **Comments**

***The United States would like clarification on the word “maintain” since fermentation will significantly change the characteristics.***

##### **1.1.1 Fermentation Noni Fruit Juice**

Whole fruits or fruit pulp should be fermented for a minimum of 10 days to a maximum of 60 days. The requirement for a starter viable microorganism for fermentation does not apply<sup>7</sup> due to the heat pasteurization that follows. The fermented products are pressed, strained, filtered, re-filtered if required to a finer degree. The filtered fermented juice product is substantially free of extraneous materials (e.g. noni leaves, stems, seed fragments, fruit skins, and insects). The resultant 100% fermented noni fruit juice is pasteurized by heat<sup>8</sup>.

<sup>7</sup> Standard for Fermented Milk (CODEX STAN 243-2003)

<sup>8</sup> Pasteurized at 82.2°C for 1 to 2 minutes

#### **Comments**

***The United States would like to highlight the following link as it appears that some noni juice are sometimes fermented longer than 60 days: [http://www.ctahr.hawaii.edu/noni/fruit\\_juices.asp](http://www.ctahr.hawaii.edu/noni/fruit_juices.asp)***

***In addition, the United States suggests considering adding some instruction on how to determine the length of fermentation, in line with comments previously submitted by Canada. Also, consider providing some description or best practices of the fermentation process (e.g. fruit treatment prior to fermentation, fermentation temperature, any monitoring procedures during fermentation).***

***With regard to Footnote 7: Are similar starter cultures used? Or is this spontaneous fermentation?***

***With regard to Footnote 8: This seems limiting. There are other suitable time/temperature conditions.***

## **2. ESSENTIAL COMPOSITION AND QUALITY FACTORS**

### **Comments**

***The United States suggests adding a description about the concentrated products in this section since it appears that some fermented noni juices are concentrated.***

### **2.3 FERMENTED NONI FRUIT JUICE**

a) Moisture:	89-96.7 %
b) Ash:	0.2-0.8 g/100 mL
c) Brix	7-14 %
d) pH	3.55-4.00

e) Acidity	0.095-0.135%
f) Ethanol	0.3% v/v
g) Deacetylasperulosidic acid	> 0.95 mg/mL
h) Scopoletin	> 0.95 mg/mL

### **Comments**

*With regard to the above, the range of moisture content (a) and the range of Brix (c) do not seem to match. Also, with regard to ethanol (f), is this the maximum: “≤0.3% v/v”?*

*With regard to Deacetylasperulosidic acid (g)—is the value supposed to indicate minimum or maximum health values? Is this a contaminant, an indicator of noni concentration, etc.?*

*With regard to Scopoletin (h), the United States suggests deleting at this time, assuming this is presented as a contaminant and will be ultimately be in the GSCTFF. Is there data to support the proposed value for scopoletin? A quick review of the literature for noni juice (not necessarily fermented) suggests that scopoletin is present in the 0.01 to 0.2 mg/ml range, well below the 0.95 mg/ml mentioned here. Also, it appears that this is a maximum value, in which case the “>” should be a “<”.*

### **2.4 DEFINITION OF DEFECTS**

Fermented noni juice shall be prepared in accordance with good manufacturing practices (GMPs) from such materials and under such practices that the product is substantially free of extraneous materials (e.g. noni leaves, **seed fragments, fruit skin fragments**, stems, insects, etc.).

### **5. PACKAGING**

The Fermented Noni Juice products must be packed in containers that safeguard its hygienic, nutritional and organoleptic quality, and also comply with the *Code of Practice for Aseptically Processed and Prepackaged Low acid Food* (CAC/RCP 40 1993). The materials used for packaging must be new (for the purposes of this Standard, this includes recycled material of food-grade quality.) The containers shall meet the quality, hygiene, ventilation and resistance characteristics to ensure suitable handling, shipping and preserving of the Fermented Noni Juice. Packages must be free of all foreign matter and smell.

### **Comments**

*The United States would like to note that the pH of the product is 3.55-4.00 (see above). It is not considered a low acid food and so therefore we question the reference above to the Code of Practice for Aseptically Processed and Prepackaged Low acid Food (CAC/RCP 40 1993).*