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Industrial Self Regulation in the fruit juice industry. AIJN Codes and guidelines

by
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1. Current AIJN Codes & Guidelines

a. Code of Practice for evaluation of fruit juices
b. Traceability guideline
c. Hygiene Code
d. Guideline restoration aroma
e. Guideline carry over aroma
g. Provisional Brix values for 26 other fruits
h. ACB guideline
2. COP - Background & Aims

- The EU Fruit Juice Directive neither contains characteristics of the defined products nor analytical methods necessary for the control of the composition.
- The EU industry needed a common basis for the assessment of quality, safety and authenticity of fruit and vegetable juices in the single European market.
- The AIJN took up this task and developed Codes and Reference Guidelines in order:
  - To meet justified customer expectations
  - To give guidance to the fruit juice industry
  - To create a level playing field for the operators in the market
Code of Practice for evaluation of Fruit and Vegetable Juices
3. Content Code of Practice

1. Introduction
2. Composition & activity of the COP expert group
3. Procedure for modifying the Code
4. General comments on purpose & use of the Code and the reference guidelines (RG’s)
5. Specific comments on certain parameters
6. Individual reference guidelines for 21 juices
7. Analytical reference methods
8. EU legislation applicable to the fruit juice industry
9. AIJN guidelines and industry positions
10. Pesticide residue overview
11. AIJN general information and up-dates
21 Individual Reference Guidelines (RG’s)

For 26 additional fruits provisional Brix and relative density values were set.
Juices should meet all of these quality parameters e.g. minimum Brix value, defects from fermentation (ethanol, lactic acid, acetic acid), heavy metals (toxicity) etc.

- “A” criteria are considered the minimum quality standards for materials on sale in the EU
- Relative density, Brix according to industry agreement
- Hygiene parameters such as volatile acidity & lactic acid, ethanol, patulin,
- Trace contaminants such as As, Pb, Cd, Hg etc.
Parameters give ranges for normal components that are useful to assess the authenticity and quality of a juice.

- These are not mandatory and only used to assess authenticity of a product.
- Include major components, such as: acids, sugars, minerals, flavonoids, pectins, carotenoids, amino acids.
- Iso-topic criteria to differentiate between:
  - NFC vs from concentrate
  - Natural and added sugar
  - Natural and added citric acid
  - FTNF and added non-FTNF aromas
The ranges cover most of the natural variation seen for juices but not the extremes.

Extremes are covered in the commentary, (e.g. low potassium levels in Israeli orange juice; low magnesium values in apple juices from China and Washington state).

If a juice fails to meet one of these criteria it should not simply be rejected.

The origin/processing history etc should be investigated & samples of fruit should be checked (e.g. Chinese apple juice).

The final evaluation should be based on the overall picture.
Establishing min/max values and ranges

by collecting information

Values + ranges

- SGF-databank
- Ind. experts
- Literature
- Companies
- Laboratories
- Standards
- Int. groups

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Composition COP Expert Group

Chairman  Martin Greeve (Döhler)

Full members
Mr  Morten Friis  Denmark  (Agrana)
Mr  Ian Howard  UK  (Gerber Foods)
Mr  José Lorente  Spain  (JBT)
Mrs  Delphine Masson  France  (Coca Cola)
Dr.  Karl Neuhaeuser  Germany  (Eckes-Granini)
Dr.  Willi Rieth  Germany  (SGF)
Mr.  Peter Spaargaren  Netherlands (Cargill)
Dr.  Antonio Trifiro  Italy  (Research Station Parma)
Dr.  David Hammond  UK  (Eurofins Lab.)
Composition COP Expert Group

Corresponding members
Prof. Nevzat Artik         Turkey       (Ankara University)
Mr Antonio Concalves       Brazil       (Louis Dreyfus)
Prof. Helmut Dietrich      Germany      (Geisenheim University)
Mr. Hany Farag             USA          (Dole)
Dr. Konstantin Eller       Russia       (Russian Academy of Sciences)
Mr Jan Paul Koorn          Netherlands (Friesland Foods)
Mr Dana Kruger             USA          (Kruger Food Laboratories)
4. Current work

Recently finalised and adopted

- Reference for carrot juice
- Provisional reference guideline for pomegranate

Working on

- Position paper pesticide residues
- Microbiological Guideline
- Guideline for aroma restoration
- Reference guideline on cranberry
- Revision on the Fruit Juice Directive
5. Global users of the COP

- A permanent aim is to turn the COP into the worldwide accepted reference document for the juice industry.
- To this end AIJN cooperates with fruit juice associations in other parts of the world to ensure that the values in the RG’s cover the natural variations of the fruits in all relevant geographical areas.
- AIJN invites experts from all over the world to participate actively as full or corresponding members in the COP Expert Group.
- AIJN seeks collaboration with IFU.
### Who is who?

<table>
<thead>
<tr>
<th>Core Competence Level</th>
<th>International</th>
<th>Legislative &amp; Technical</th>
<th>Authenticity &amp; Quality Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>IFU and members</td>
<td>International Federation of Fruit Juice Producers</td>
<td>SGF / IRMA International Raw Material Assurance</td>
</tr>
<tr>
<td>European</td>
<td>AIJN</td>
<td>European Fruit Juice Association</td>
<td>EQCS</td>
</tr>
<tr>
<td>Regional</td>
<td>BSDA, VDF</td>
<td>BSDA, DQCS</td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>BSDA, VDF</td>
<td>BSDA, DQCS</td>
<td></td>
</tr>
</tbody>
</table>

| Regional              | BSDA, VDF | BSDA, DQCS |

**IFU**: International Federation of Fruit Juice Producers

**AIJN**: European Fruit Juice Association

**EQCS**: European Quality Control System

**SGF**: SGF / IRMA International Raw Material Assurance

**BSDA, DQCS**: BSDA, DQCS

**Legislative & Technical**: Level

**Authenticity & Quality Control**: Level

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**BSDA, DQCS**: BSDA, DQCS
European Quality Control System (EQCS)

EQCS – status today

Bottler /packer controls

SGF/IQCS

Germany, Austria, Hungary, Denmark, Slovenia, Czech Republic, Estonia, Lithuania, Portugal

France
QUALIJUS

United Kingdom
BSDA

The Netherlands
DQCS

Spain
AEAZN

Poland
DSK

Ireland
IFJP

Agreement
EQCS / SGF

RM supplier control

SGF / IRMA

Control of > 400 raw material (RM) producers in > 50 countries

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European Quality Control System

Membership

Regional Quality Control Systems
SGF/IQCS

National Quality Control Systems
Netherlands - France
UK - Poland - Spain, Ireland

AIJN

Main Goals

• Protect the fruit juice industry against loss of image and unfair competition
• Provide rules and guidelines for participants
• Provide early warning information

Control Scope

• Fruit juices, nectars & fruit juice drinks
• Raw materials
• Legal requirements
• AIJN Code of Practice
• Labelling requirements
• Compliance system rules
• Hygiene standards
• IRMA Code of conduct

• Protect the fruit juice industry against loss of image and unfair competition
• Provide rules and guidelines for participants
• Provide early warning information
International Raw Material Assurance (IRMA)

**Association**
- IRMA
- Department of SGF-International
- Approx. 400 members in > 50 countries
- Members are fruit processors, blending stations, cool stores, traders & brokers

**Function**
- To assure safe and authentic raw materials and fair competition
- To provide EU customers with certified raw materials

**Tasks**
- Carry out plant inspections worldwide
- Assess compliance to hygiene rules and regulations
- Assess compliance with industry codes like the AIJN COP, labelling and ethical codes
Argentina
Austria
Belgium
Belize
Brazil
Chile
China
Columbia
Costa Rica
Cuba
Cyprus
Czech Republic
Denmark
Ecuador
Finland
France
Germany
Great Britain
Greece
Guatemala
Honduras
Hungary
India
Indonesia
Ireland
Israel
Italy
Ivory Coast
Kenya
Malaysia
Mexico
Morocco
Paraguay
Pakistan
Peru
Philippines
Poland
Romania
Slovenia
South Africa
Spain
Sweden
Switzerland
Thailand
The
Netherlands
Turkey
Ukraine
United States
Uruguay
SGF-IRMA
Raw Material Assurance and Supplier Control
SGF-IRMA
Approved Supplier
6. Other Guidelines

b. Traceability guideline

Guideline on traceability of fruit juices and similar fruit derived products was drafted in close cooperation with the European Quality Control System


- defines “traceability” as “the ability to trace and follow a food, feed, feed-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution (art.3.15)”

- Stipulates that food operators shall be able to identify any person from whom they have been supplied with a food or any substance intended to be incorporated into a food
b. Traceability Guideline cont.

Reg.178/2002

- Requires that such (food) operators shall have in place systems and procedures which allow for this information to be made available to the competent authorities on demand

- Requests further that food operators shall have in place systems and procedures to identify the other businesses to which their products have been supplied (this info is to be made available to authorities on demand)
b. Traceability guideline

The objective of the guideline is to detail the minimum requirements for traceability of fruit juice and similar, fruit derived products in the modern distribution chain.

The scope of the guideline is limited to the incoming fruits, additives and ingredients, processed fruit products, intermediate and finished products.
b. Traceability Guideline cont.

Parties involved within the supply chain are:

- fruit processor
- manufacturer of intermediate products
- storer
- transporter
- distributor/agent/importer/broker
- filler/packer of finished products

It is the responsibility of each stakeholder to identify and implement the min. requirements as specified in the guideline
### b. Traceability guideline cont.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Input (product)</th>
<th>Process step</th>
<th>Minimum identification / registration</th>
<th>Output (product)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Fruit processor</td>
<td>Fruit</td>
<td>Fruit receipt</td>
<td>Supplier/ fruit and lot identification Reception date, quantity</td>
<td>Fruit</td>
</tr>
<tr>
<td>2</td>
<td>Fruit</td>
<td>Fruit storage</td>
<td>Storage location ID related to each lot of fruit</td>
<td>Fruit</td>
</tr>
<tr>
<td>3</td>
<td>Fruit</td>
<td>Juice extraction</td>
<td>Juice reception tank no. and or batch no. related to fruit lot and fruit storage ID Extraction time and quantity</td>
<td>Extracted fruit juice / puree</td>
</tr>
<tr>
<td>4</td>
<td>Extracted fruit juice / puree</td>
<td>Further processing / re-processing</td>
<td>Batch- and tank no. Treatment with start and finish date and time Traceability data on all processing aids.</td>
<td>Intermediate product</td>
</tr>
</tbody>
</table>
c. Hygiene Code

- The original AIJN Guide of Good Hygiene Practice for the Fruit Juice Industry dates from March 1995

- The Guide has been revised and extended in collaboration with SGF/IRMA. The revised Code was adopted and published end of 2003

- The AIJN Hygiene Code is the basis for the SGF-IRMA worldwide hygiene audits of raw material producers
c. Hygiene Code cont.

- The Code meets the requirements of the EU Hygiene Directive which requests that food operators shall identify any step in their activities which is critical to ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the principles used to develop the system of HACCP.

- The Code also takes into account the Revised Codex Alimentarius General Principles of Food Hygiene (1994) as well as the Codex Guidelines for the Application of the HACCP System.

- The AIJN Code covers the whole fruit and vegetable juices and nectars sector from the fruit processor to the manufacturers of the consumer product.
Objectives of the Code

✓ Recommend appropriate general hygienic practices for use in the extraction, preparation, processing, manufacturing, packaging, storage, transportation and distribution to ensure a safe, sound and wholesome product. The Hazard Analysis and Critical Control Points principles are incorporated;

✓ Intended to assist manufacturers in maintaining appropriate hygienic standards in their production plants, taking into account their particular business environment. Therefore, some commonly used processed processes are described as examples to be used by manufacturers for their specific processes
h. ACB best practice guideline

- A guideline for the reduction and control of thermophylic, sporeforming bacteria (Alicyclobacillus species, ACB) in the production, packaging and distribution of fruit juices, juice concentrates purees and nectars

- Objectives:
  - To identify good manufacturing practice for reduction and control of ACB’s
  - To identify control measures
  - To highlight control points
  - To identify and suggest various testing options
  - To indicate gaps in our current knowledge and recommend further research
h. ACB best practice guideline

- Content ACB guideline
  - Objectives
  - Definitions
  - Introduction
  - Summary of recommended control points
  - Water
  - Fruit Processing
  - Filling factory /bottler
  - Microbiology
  - Recommendation for further research
  - Appendices
7. Effect industrial self regulation and self control

- Having self regulation and self control in place has proven to be very effective in the fruit juice industry.
- Recent example: In 2001 SGF International supported by the AIJN and industry sponsors started a project QUISEE (Quality Initiative South and East Europe)
- AIM: to improve compliance of fruit juices and nectars to EU legal and industry requirements.
- Co-operation with local industry and government has been successful (step by step)
- Compliance with requirements improved, quality of products improved and consumption increased.
Findings in “new” EU Member States between 2002 and 2007

Products in compliance with overall expectations in "new" EU Member States as a % of the tested products at the beginning and end of the QUISEE project
Example - Poland

Poland - fruit juices and nectars
conformity as % of the tested products

- 0%
- 20%
- 40%
- 60%
- 80%
- 100%

- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007

- not conform
- conform
Example Poland

Poland - fruit juices and nectars
no. of deviations per category

- authenticity
- Brix
- aroma
- fruit content
per cap movement in EU markets

Juice & Nectars ’01 - ‘06

Change in litres per cap

Scotland

Source: Canadean
8. Conclusion

- **Fruit juice legislation is the basis for and needed by the industry in the EU.**
- **Industrial self regulation provides industry agreements in those fields the legislation is not very specific.**
- **Industrial self control provides an independent monitoring of the EU market as well as the raw materials for this market.**
- **Industry monitoring for safety and authenticity has proven to be effective.**
- **All together the industry is providing a fair playing field which is good for the consumer and the industry.**
THANKS FOR YOUR ATTENTION