

TEA & HERBAL INFUSIONS EUROPE

Formerly: European Tea Committee (ETC) and European Herbal Infusions Association (EHIA)



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Compendium of Guidelines for Herbal and Fruit Infusions (Former EHIA Document)

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INTRODUCTION

The former European Herbal Infusion Association (EHIA), founded in 1980, represented the European herbal and fruit infusions Industry and, in January 2015, together with the European Tea Committee (ETC) formed the new association, Tea & Herbal Infusions Europe (THIE).

THIE gathers a professional knowledge on all topics of herbal and fruit infusions and extracts thereof, used as foodstuffs.

THIE cooperates with competent EU-authorities and other national and international authorities for the interest and benefit of the product group of herbal and fruit infusions, respectively their extracts.

Herbal and fruit infusions are a part of European tradition and culture. Their popularity reflects increasing consumer appreciation for the wide range of natural and refreshing tastes they offer.

Legal provisions for herbal and fruit infusions and extracts thereof are not harmonised and may differ considerable in the Member States. To promote a common understanding of what herbal and fruit infusions are, to promote free trade in the European market and to improve consumer's knowledge about their products the herbal and fruit infusions' industry has completed the present Compendium. The Compendium reflects the practice of the industry in the EU Member States and links it to the relevant legal EU provisions and standards in force.

Products are consumed not only as traditional herbal and fruit infusions, but increasingly also as preparations from herbal and fruit infusions and ingredients of other foodstuffs, e.g. herbal and fruit ice tea, instant preparations or concentrates from herbal and fruit infusions.

THIE's intention in establishing this Compendium of Guidelines is:

- to update and further develop the existing Compendium of Guidelines from 28th of November, 2000
- to compile all relevant legal provisions in the EU and standards in force
- to establish a scientific basis for herbal and fruit infusions, their extracts and preparations in the EU
- to promote and set harmonised Quality Standards for different product categories in the EU, falling into the scope of THIE's responsibility
- to provide a basis for free trade of the products in the EU market
- to promote a high quality policy for the relevant products
- to acknowledge the industry's responsibility for food safety
- to provide a comprehensive Compendium of Guidelines for the industry, authorities and other interested parties
- to improve transparency and to provide clear consumer information

The Compendium of Guidelines will be updated regularly according to legal and technical developments.



PART I: Herbal and Fruit Infusions (HFI), Flavoured Herbal and Fruit Infusions (FHFI) and HFI or FHFI with other food ingredients

Category	Herbal and Fruit Infusions (HFI)	Flavoured Herbal and Fruit Infusions (FHFI)	HFI or FHFI with other Food Ingredients
1. General properties of the category			
1.1 Definition	<p>HFI materials are plants or parts of plants that do not originate from the tea plant (<i>Camellia sinensis</i> (L.) O. Kuntze) and are intended for food use by brewing with freshly boiling water. They also include blends of HFI with tea as a minor component.</p> <p>Plants and parts of plants commonly used in HFI are listed in the THIE Inventory List of Herbals Considered as Food in its current version available under www.thie-online.eu. This list is not exhaustive and updated regularly. The Novel Food Regulation (EC) 258/1997 applies without prejudice.</p> <p>Any use for medicinal purposes is not within the scope of this guideline. For the definition of foodstuff and pharmaceutical products the principles of EU law apply.</p>	<p>Flavoured HFI are products to which flavourings and/or food ingredients with flavouring properties are added in order to lend a specific flavour.</p>	<p>HFI or FHFI with other food ingredients which do not fall under the definition of a flavouring or food ingredients with flavouring properties.</p>
1.2 Ingredients	<p>HFI consist of the plants and parts of plants mentioned before.</p>	<p>Flavoured HFI consist of:</p> <ul style="list-style-type: none"> ▪ HFI ▪ flavourings. However, these substances are not used for the purpose of imitating or intensifying the fragrance and/or taste of any particular HFI product which is marketed as such (e.g. peppermint infusion) ▪ food ingredients with flavouring properties (e.g. juice, juice concentrate) 	<p>HFI or FHFI with other food ingredients can consist of:</p> <ul style="list-style-type: none"> ▪ HFI ▪ flavourings. However, these substances are not used for the purpose of imitating or intensifying the fragrance and/or taste of any particular HFI product which is marketed as such (e.g. peppermint infusion) ▪ food ingredients with flavouring properties (e.g. juice, juice concentrate) ▪ other food ingredients (e.g. inulin, vitamins, minerals) <p>Legal requirements with regard to "carry-over" apply.</p>



Category	Herbal and Fruit Infusions (HFI)	Flavoured Herbal and Fruit Infusions (FHFI)	HFI or FHFI with other Food Ingredients
1.3 General characteristics of the product	<p>HFI are low moisture foodstuffs and therefore microbiologically stable under normal (max. 25° C, max.65% RH, light protected) storage conditions.</p> <p>1. HFI are virtually free from vegetative forms of mould and foreign matters. The likely occurrence of a physical hazard is reduced to an acceptable level as far as technically feasible. For other foreign matters (foreign plant material and non-plant material) which do not present a health risk a tolerance of max. 2 % is accepted as HFI are a natural product.</p> <p>2. The content of acid-insoluble ash in the dry mass of HFI provides information on whether the plant parts concerned are contaminated or adulterated with mineral components such as soil or sand in excess of the technically unavoidable limit. The table in Annex 1 gives figures which are not commonly exceeded.</p> <p>3. The loss on drying under defined conditions of analysis is an indicator for the content of water, volatile oil and/or other volatile components. The table in Annex 1 gives figures for HFI which are generally not exceeded.</p> <p>4. The amount of a minimum oil content for some products is also indicated in Annex 1.</p> <p>Methods are given in Annex 2.</p>	<p>Such products are low moisture foodstuffs and therefore microbiologically stable under normal (max. 25° C, max. 65% RH, light protected) storage conditions.</p> <p>1. Such products are virtually free from vegetative forms of mould and foreign matters. The likely occurrence of a physical hazard is reduced to an acceptable level as far as technically feasible. For other foreign matters (foreign plant material and non-plant material) which do not present a health risk a tolerance of max. 2 % is accepted as HFI are a natural product.</p> <p>2. The content of acid-insoluble ash in the dry mass of such products provides information on whether the plant parts concerned are contaminated or adulterated with mineral components such as soil or sand in excess of the technically unavoidable limit. The table in Annex 1 gives figures which are not commonly exceeded.</p> <p>3. The loss on drying under defined conditions of analysis is an indicator for the content of water, volatile oil and/or other volatile components. The table in Annex 1 gives figures for HFI which are generally not exceeded.</p> <p>4. The amount of a minimum oil content for some products is also indicated in Annex 1.</p> <p>Methods are given in Annex 2.</p>	<p>Such products are low moisture foodstuffs and therefore microbiologically stable under normal (max. 25° C, max. 65% RH, light protected) storage conditions.</p> <p>1. Such products are virtually free from vegetative forms of mould and foreign matters. The likely occurrence of a physical hazard is reduced to an acceptable level as far as technically feasible. For other foreign matters (foreign plant material and non-plant material) which do not present a health risk a tolerance of max. 2 % is accepted as HFI are a natural product.</p> <p>2. The content of acid-insoluble ash in the dry mass of such products provides information on whether the plant parts concerned are contaminated or adulterated with mineral components such as soil or sand in excess of the technically unavoidable limit. The table in Annex 1 gives figures which are not commonly exceeded.</p> <p>3. The loss on drying under defined conditions of analysis is an indicator for the content of water, volatile oil and/or other volatile components. The table in Annex 1 gives figures for HFI which are generally not exceeded.</p> <p>4. The amount of a minimum oil content for some products is also indicated in Annex 1.</p> <p>Methods are given in Annex 2.</p>



Category	Herbal and Fruit Infusions (HFI)	Flavoured Herbal and Fruit Infusions (FHFI)	HFI or FHFI with other Food Ingredients
1.4 Name and Presentation	<p>HFI are denominated by the name of the type of the plant or part of the plant used, also in combination with the word tea or infusion, if the product in question derives from a single plant type, for instance peppermint or peppermint tea/infusion, or if it is manufactured from two types of plants, for instance <i>rose hip with hibiscus</i> or <i>rose hip tea/infusion with hibiscus</i>. If HFI are manufactured from several types of plants, generic terms are also used in combination with the word tea/infusion, for instance <i>herbal tea, fruit tea</i> or <i>herbal infusion</i>.</p> <p>If one type of plant - except tea - accounts for a considerable percentage of the total weight and determines the character of the product, it is possible to name the blend after this plant in combination with the word blend, for instance <i>lemon balm blend</i> or <i>lemon balm tea blend</i>. In several countries at least more than half of the total weight is regarded as being considerable.</p> <p>If tea is also used and the presence of tea is emphasised, the tea content is stated in percentage of the product.</p> <p>Pictures or graphics match the product.</p>	<p>Flavoured HFI are denominated like herbal infusions, indicating in addition that they are flavoured, for instance <i>herbal infusion, flavoured</i> or <i>fruit tea, flavoured</i>. An indication of the flavour is given, for instance <i>flavoured herbal infusion - black currant</i>.</p> <p>If tea is also used and the presence of tea is emphasised, the tea content is stated in percentage of the product.</p> <p>Pictures or graphics match the product. This means that e.g. pictorials can be placed on the package to represent the appropriate flavours, if they are properly labelled in the list of ingredients.</p>	<p>For HFI or FHFI with other food ingredients a descriptive denomination is used (e.g. lemon balm blend flavoured strawberry with vitamins A, C, E).</p> <p>If tea is also used and the presence of tea is emphasised, the tea content is stated in percentage of the product.</p> <p>Pictures or graphics match the product. This means that e.g. pictorials can be placed on the package to represent the appropriate flavours, if they are properly labelled in the list of ingredients.</p>
1.5 Characteristics of common ingredients for herbal and fruit infusions	Characteristics of a selection of most important plants and parts of plants listed in the THIE Inventory List and used as ingredients for HFI are described in Annex 3 .	Characteristics of a selection of most important plants and parts of plants listed in the THIE Inventory List and used as ingredients for HFI are described in Annex 3 .	Characteristics of a selection of most important plants and parts of plants listed in the THIE Inventory List and used as ingredients for HFI are described in Annex 3 .
1.6 Type of Products	The commonly used cuts/types of products are given in Annex 4 .	The commonly used cuts/types of products are given in Annex 4 .	The commonly used cuts/types of products are given in Annex 4 .
1.7 Infusion / Sensory Evaluation	THIE Standard Procedure for Preparation of Infusion Liquors for Sensory Evaluation is given in Annex 5 .	THIE Standard Procedure for Preparation of Infusion Liquors for Sensory Evaluation is given in Annex 5 .	THIE Standard Procedure for Preparation of Infusion Liquors for Sensory Evaluation is given in Annex 5 .
2. General requirements for all categories in EU legislation based on Regulation (EC) 178/2002 in its current version			
2.1 Labelling in general	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).



Category	Herbal and Fruit Infusions (HFI)	Flavoured Herbal and Fruit Infusions (FHFI)	HFI or FHFI with other Food Ingredients
2.2 Pesticide residues and contaminants	Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold. Processing factors have to be considered.	Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold. Processing factors have to be considered.	Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold. Processing factors have to be considered.
2.2a Pesticide residues	Regulation (EC) 396/2005 in its current version	Regulation (EC) 396/2005 in its current version	Regulation (EC) 396/2005 in its current version
2.2b Metals	Regulations (EC) 396/2005 and (EC) 1881/2006 in their current versions	Regulations (EC) 396/2005 and (EC) 1881/2006 in their current versions	Regulations (EC) 396/2005 and (EC) 1881/2006 in their current versions
2.2c Mycotoxins	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version
2.2d Contaminants others than metals and mycotoxins	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version
2.3 Radioactivity	Regulation (EC) 1609/2000 in its current version	Regulation (EC) 1609/2000 in its current version	Regulation (EC) 1609/2000 in its current version
2.4 Irradiation	Directives 1999/2/EC and 1999/3/EC	Directives 1999/2/EC and 1999/3/EC	Directives 1999/2/EC and 1999/3/EC
2.5 Hygiene	Regulation (EC) 852/2004 in its current version	Regulation (EC) 852/2004 in its current version	Regulation (EC) 852/2004 in its current version
2.6 GMO	Regulations (EC) 1829/2003 and 1830/2003 in their current versions	Regulations (EC) 1829/2003 and 1830/2003 in their current versions	Regulations (EC) 1829/2003 and 1830/2003 in their current versions
2.7 Allergens	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).
3. Specific requirements for certain categories in EU legislation			
3.1 Other food ingredients			Regulation (EC) 178/2002 in its current version
3.2 Flavourings		Regulation (EC) 1334/2008 in its current version on flavourings as such	Regulation (EC) 1334/2008 in its current version on flavourings as such



Category	Herbal and Fruit Infusions (HFI)	Flavoured Herbal and Fruit Infusions (FHFI)	HFI or FHFI with other Food Ingredients
3.3 Vitamins and minerals			Regulation (EC) 1925/2006 in its current version
3.4 Food additives		Regulation (EC) 1333/2008 in its current version	Regulation (EC) 1333/2008 in its current version
<p>4. THIE requirements for all categories</p> <p>Based on practical experience THIE has defined and agreed guidelines for the following parameters. THIE sees the necessity for certain Member States to adopt legal parameters to what is reasonably practical.</p> <p>Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold.</p>			
4.1 Pesticide residues	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu) in their current versions; for fresh products THIE applies a drying factor of 5.	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu) in their current versions; for fresh products THIE applies a drying factor of 5.	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu) in their current versions; for fresh products THIE applies a drying factor of 5.
4.2 Metals	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu), Regulation (EC) 1881/2006 in their current versions; for fresh products THIE applies a drying factor of 5. THIE's Recommended Heavy Metal Specification for Herbal Infusions Raw Materials regarding Lead (Pb) and Cadmium (Cd) Annex 6 .	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu), Regulation (EC) 1881/2006 in their current versions; for fresh products THIE applies a drying factor of 5. THIE's Recommended Heavy Metal Specification for Herbal Infusions Raw Materials regarding Lead (Pb) and Cadmium (Cd) Annex 6 .	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu), Regulation (EC) 1881/2006 in their current versions; for fresh products THIE applies a drying factor of 5. THIE's Recommended Heavy Metal Specification for Herbal Infusions Raw Materials regarding Lead (Pb) and Cadmium (Cd) Annex 6 .
4.3 Mycotoxins	Regulation (EC) 1881/2006 in its current version. THIE's Recommended Mycotoxin Specification for Herbal Infusions Raw Materials regarding aflatoxins B ₁ , sum of B ₁ , B ₂ , G ₁ , G ₂ Annex 7 .	Regulation (EC) 1881/2006 in its current version. THIE's Recommended Mycotoxin Specification for Herbal Infusions Raw Materials regarding aflatoxins B ₁ , sum of B ₁ , B ₂ , G ₁ , G ₂ Annex 7 .	Regulation (EC) 1881/2006 in its current version. THIE's Recommended Mycotoxin Specification for Herbal Infusions Raw Materials regarding aflatoxins B ₁ , sum of B ₁ , B ₂ , G ₁ , G ₂ Annex 7 .
4.4 Microbiology	THIE's Recommended Microbiological Specification for Trade in Herbal Infusion Raw Materials Annex 8 THIE's Recommended Microbiological Specification for Herbal Infusions (dry) Annex 9	THIE's Recommended Microbiological Specification for Trade in Herbal Infusion Raw Materials Annex 8 THIE's Recommended Microbiological Specification for Herbal Infusions (dry) Annex 9	THIE's Recommended Microbiological Specification for Trade in Herbal Infusion Raw Materials Annex 8 THIE's Recommended Microbiological Specification for Herbal Infusions (dry) Annex 9
4.5 Irradiation	Directive 1999/2/EC and 1999/3/EC and THIE Statement Annex 10	Directive 1999/2/EC and 1999/3/EC and THIE Statement Annex 10	Directive 1999/2/EC and 1999/3/EC and THIE Statement Annex 10
4.6 Hygiene	Regulation (EC) 852/2004 in its current version. THIE Guideline for Good Agricultural and Hygiene Practices for Raw Materials used for Herbal Infusions – GAHP Annex 11	Regulation (EC) 852/2004 in its current version. THIE Guideline for Good Agricultural and Hygiene Practices for Raw Materials used for Herbal Infusions – GAHP Annex 11 .	Regulation (EC) 852/2004 in its current version. THIE Guideline for Good Agricultural and Hygiene Practices for Raw Materials used for Herbal Infusions – GAHP Annex 11 .

PART II: Extracts from Herbal and Fruit Infusions (EHFI), Flavoured Extracts from Herbal and Fruit Infusions (FEHFI) and Preparations from Foodstuffs with Extracts from Herbal and Fruit Infusions

Category	Extracts from Herbal and Fruit Infusions (EHFI)	Flavoured Extracts from Herbal and Fruit Infusions (FEHFI)	Preparations from foodstuffs with extracts from Herbal and Fruit Infusions
1. General properties of the category			
1.1 Definition	Extracts from HFI are aqueous extracts from HFI from which water is removed to a greater or lesser extent.	Flavoured EHFI are aqueous extracts from HFI from which water is removed to a greater or lesser extent and to which flavourings and/or food ingredients with flavouring properties are added in order to lend a specific flavour.	Preparations from foodstuffs with EHFI and/or FEHFI are foodstuffs which are used for the production of beverages which are characterised by the use of extracts from herbal and fruit infusions. There are different kinds of preparations, e.g.: <ul style="list-style-type: none"> ▪ final products which have to be prepared by the consumer, like instant preparations, ready mixes, dry and liquid concentrates, tablets, granules ▪ ingredients which are used for final products like ready to drink products.
1.2 Ingredients	In the production of extracts from HFI it is customary to use: <ul style="list-style-type: none"> ▪ natural fragrance and/or flavouring substances which are separated or recovered during production (recovery flavour) ▪ maltodextrin for the purpose of maintaining flowability ▪ to improve solubility of HFI extracts in cold water up to 10g sodium hydroxide or potassium hydroxide per 100g of dry mass of HFI extract, independent of the substances necessary for neutralization (acetic acid, lactic acid, tartaric acid, citric acid or carbonic acid). ▪ food additives pursuant to the Regulation (EC) 1333/2008 in its current version. 	Flavoured EHFI consist of: <ul style="list-style-type: none"> ▪ EHFI ▪ flavourings. However, these substances are not used for the purpose of imitating or intensifying the fragrance and/or taste of any particular EHFI product which is marketed as such (e.g. peppermint extract) ▪ food ingredients with flavouring properties (e.g. juice, juice concentrate) 	Preparations from foodstuffs with extracts from herbal and fruit infusions can consist of: <ul style="list-style-type: none"> ▪ EHFI/FEHFI ▪ flavourings ▪ foodstuffs (e.g. juice, juice concentrate, water, milk powder, maltodextrin, sugar) ▪ vitamins, minerals ▪ food additives pursuant to the Regulation (EC) 1333/2008 in its current version.

Category	Extracts from Herbal and Fruit Infusions (EHFI)	Flavoured Extracts from Herbal and Fruit Infusions (FEHFI)	Preparations from foodstuffs with extracts from Herbal and Fruit Infusions
1.3 General characteristics of the product	<p>Extracts from HFI are available in liquid and powdered forms.</p> <p>Such products are virtually free from vegetative forms of mould and foreign matters.</p> <p>Extracts in powdered form, show a maximum mass loss of 8 per cent.</p> <p>The general production process is described in Annex 12.</p>	<p>Flavoured EHFI are available in liquid and powdered forms.</p> <p>Such products are virtually free from vegetative forms of mould and foreign matters.</p> <p>Extracts in powdered form, show a maximum mass loss of 8 per cent.</p> <p>The general production process is described in proposed Annex 12.</p>	<p>Preparations from foodstuffs with EHFI and/or FEHFI are available in liquid and powdered forms.</p> <p>Ready to consume products using such preparations contain no less than 0.12 g dry mass of EHFI in 100 ml. In case the drink has to be prepared by final consumers, it refers to the drink made according to the instruction for the preparation.</p> <p>Dry mass is defined as pure EHFI without additives or any other ingredients.</p> <p>Such products are virtually free from vegetative forms of mould and foreign matters.</p>
1.4 Name and Presentation	<p>Extracts from HFI are denominated by the name of the type of the plant or part of the plant used, in combination with the word “extract”, if the product in question derives from a single plant type, for instance <i>extract of peppermint</i> or <i>peppermint extract</i>, or if it is manufactured from two types of plants, for instance <i>rose hip with hibiscus extract</i> or <i>extract of rose hip with hibiscus</i>.</p> <p>If extracts of HFI are manufactured from several types of plants, generic terms are used in combination with the word “extract”, for instance <i>herbal tea extract</i>, <i>extract of fruit tea</i>.</p> <p>If one type of plant - except tea - accounts for a considerable percentage of the total weight and determines the character of the product, it is possible to name the extract after this plant in combination with the word “blend”, for instance <i>extract of lemon balm blend</i> or <i>lemon balm blend extract</i>. In several countries at least more than half of the total weight is regarded as being considerable.</p> <p>Pictures or graphics match the product.</p> <p>Improved solubility in cold water can be indicated by the additional use of the term “soluble in cold water”.</p>	<p>Flavoured EHFI are denominated like EHFI, indicating in addition that they are flavoured, for instance <i>extract of herbal infusion, flavoured</i> or <i>fruit tea extract, flavoured</i>. An indication of the flavour is given, for instance <i>flavoured extract of herbal infusion – black currant</i>.</p> <p>Pictures or graphics match the product. This means that e.g. pictorials can be placed on the package to represent the appropriate flavours, if they are properly labelled in the list of ingredients.</p> <p>Improved solubility in cold water can be indicated by the additional use of the term <i>soluble in cold water</i>.</p>	<p>Preparations from foodstuffs with EHFI and/or FEHFI which are final products and have to be prepared by the consumer are denominated <i>preparation for herbal and fruit infusion drinks</i> or e.g. <i>peppermint instant preparation, peppermint infusion concentrate</i>.</p> <p>Products ready to drink containing preparations according 3.1 indent 2 are denominated e.g. <i>peppermint tea drink</i>.</p> <p>An indication of the flavour is given.</p> <p>Pictures or graphics match the product. This means that e.g. pictorials can be placed on the package to represent the appropriate flavours, if they are properly labelled in the list of ingredients.</p> <p>Improved solubility in cold water can be indicated by the additional use of the term <i>soluble in cold water</i>.</p>



Category	Extracts from Herbal and Fruit Infusions (EHFI)	Flavoured Extracts from Herbal and Fruit Infusions (FEHFI)	Preparations from foodstuffs with extracts from Herbal and Fruit Infusions
1.5 Characteristics of common ingredients for herbal and fruit infusions	Characteristics of a selection of most important plants and parts of plants used for HFI extracts listed in the THIE Inventory List are described in Annex 3 .	Characteristics of a selection of most important plants and parts of plants used for HFI extracts listed in the THIE Inventory List are described in Annex 3 .	Characteristics of a selection of most important plants and parts of plants used for HFI extracts listed in the THIE Inventory List are described in Annex 3 .
1.6 Type of Products	The commonly used types of products are given in Annex 4 .	The commonly used types of products are given in Annex 4 .	The commonly used types of products are given in Annex 4 .
1.7 Infusion / Sensory Evaluation	THIE Standard Procedure for Preparation of HFI extracts for Sensory Evaluation is given in Annex 13 .	THIE Standard Procedure for Preparation of HFI extracts for Sensory Evaluation is given in Annex 13 .	No standard procedure available.
2. General requirements for all categories in EU legislation based on Regulation (EC) 178/2002 in its current version			
2.1 Labelling in general	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).
2.2 Pesticide residues and contaminants	Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold. Processing factors have to be considered.	Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold. Processing factors have to be considered.	Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold. Processing factors have to be considered.
2.2a Pesticide residues	Regulation (EC) 396/2005 in its current version	Regulation (EC) 396/2005 in its current version	Regulation (EC) 396/2005 in its current version
2.2b Metals	Regulations (EC) 396/2005 and (EC) 1881/2006 in their current versions	Regulations (EC) 396/2005 and (EC) 1881/2006 in their current versions	Regulations (EC) 396/2005 and (EC) 1881/2006 in their current versions
2.2c Mycotoxins	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version
2.2d Contaminants others than metals and mycotoxins	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version	Regulation (EC) 1881/2006 in its current version
2.3 Radioactivity	Regulations (EC) 1609/2000 and (EU) 297/2011 in their current versions	Regulations (EC) 1609/2000 and (EU) 297/2011 in their current versions	Regulations (EC) 1609/2000 and (EU) 297/2011 in their current versions
2.4 Irradiation	Directives 1999/2/EC and 1999/3/EC in their current versions	Directives 1999/2/EC and 1999/3/EC in their current versions	Directives 1999/2/EC and 1999/3/EC in their current versions
2.5 Hygiene	Regulation (EC) 852/2004 in its current version	Regulation (EC) 852/2004 in its current version	Regulation (EC) 852/2004 in its current version



Category	Extracts from Herbal and Fruit Infusions (EHFI)	Flavoured Extracts from Herbal and Fruit Infusions (FEHFI)	Preparations from foodstuffs with extracts from Herbal and Fruit Infusions
2.6 GMO	Regulations (EC) 1829/2003 and 1830/2003 in their current versions	Regulations (EC) 1829/2003 and 1830/2003 in their current versions	Regulations (EC) 1829/2003 and 1830/2003 in their current versions
2.7 Allergens	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).	Directive 2000/13/EC in its current version, Regulation (EU) No 1169/2011 in its current version (applies in general from 13 December 2014).
3. Specific requirements for certain categories in EU legislation			
3.1 Other food ingredients			Regulation (EC) 178/2002 in its current version
3.2 Flavourings		Regulation (EC) 1334/2008 in its current version on flavourings as such	Regulation (EC) 1334/2008 in its current version on flavourings as such
3.3 Vitamins and Minerals			Regulation (EC) 1925/2006 in its current version
3.4 Food additives	Regulation (EC) 1333/2008 in its current version	Regulation (EC) 1333/2008 in its current version	Regulation (EC) 1333/2008 in its current version
4. THIE requirements for all categories			
<p>Based on practical experience THIE has defined and agreed guidelines for the following parameters. THIE sees the necessity for certain Member States to adopt legal parameters to what is reasonably practical.</p> <p>Maximum limits for pesticides, metals and contaminants apply to the raw materials if there is no legal maximum limit specified in the according EU Regulations for the extract as such or for the products ready to use respectively as sold.</p> <p>Processing factors have to be considered.</p>			
4.1 Pesticide Residues	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu) in their current versions; for fresh products THIE applies a drying factor of 5.	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu) in their current versions; for fresh products THIE applies a drying factor of 5.	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu) in their current versions; for fresh products THIE applies a drying factor of 5.
4.2 Metals	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu), Regulation (EC) 1881/2006 in their current versions; for fresh products THIE applies a drying factor of 5. THIE's Recommended Heavy Metal Specification for Herbal Infusions Raw Materials regarding Lead (Pb) and Cadmium (Cd) Annex 6.	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu), Regulation (EC) 1881/2006 in their current versions; for fresh products THIE applies a drying factor of 5. THIE's Recommended Heavy Metal Specification for Herbal Infusions Raw Materials regarding Lead (Pb) and Cadmium (Cd) Annex 6.	Regulation (EC) 396/2005 and THIE ALLOCATION LIST (available under www.thie-online.eu), Regulation (EC) 1881/2006 in their current versions; for fresh products THIE applies a drying factor of 5. THIE's Recommended Heavy Metal Specification for Herbal Infusions Raw Materials regarding Lead (Pb) and Cadmium (Cd) Annex 6.
4.3 Mycotoxins	Regulation (EC) 1881/2006 in its current version. THIE's Recommended Mycotoxin Specification for Herbal Infusions Raw Materials regarding aflatoxins B ₁ , sum of B ₁ , B ₂ , G ₁ , G ₂ Annex 7.	Regulation (EC) 1881/2006 in its current version. THIE's Recommended Mycotoxin Specification for Herbal Infusions Raw Materials regarding aflatoxins B ₁ , sum of B ₁ , B ₂ , G ₁ , G ₂ Annex 7.	Regulation (EC) 1881/2006 in its current version. THIE's Recommended Mycotoxin Specification for Herbal Infusions Raw Materials regarding aflatoxins B ₁ , sum of B ₁ , B ₂ , G ₁ , G ₂ Annex 7.



Category	Extracts from Herbal and Fruit Infusions (EHFI)	Flavoured Extracts from Herbal and Fruit Infusions (FEHFI)	Preparations from foodstuffs with extracts from Herbal and Fruit Infusions
4.4 Microbiology	THIE's Recommended Microbiological Specification for Extracts from Herbal Infusions Annex 14	THIE's Recommended Microbiological Specification for Extracts from Herbal Infusions proposed Annex 14	THIE's Recommended Microbiological Specification for Extracts from Herbal Infusions proposed Annex 14
4.5 Irradiation	Directive 1999/2/EC and 1999/3/EC in their current versions and THIE Statement Annex 10	Directive 1999/2/EC and 1999/3/EC in their current versions and THIE Statement Annex 10	Directive 1999/2/EC and 1999/3/EC in their current versions and THIE Statement Annex 10
4.6 Hygiene	Regulation (EC) 852/2004 in its current version. THIE Guideline for Good Agricultural and Hygiene Practices for Raw Materials used for Herbal Infusions - GAHP Annex 11 .	Regulation (EC) 852/2004 in its current version. THIE Guideline for Good Agricultural and Hygiene Practices for Raw Materials used for Herbal Infusions - GAHP Annex 11 .	Regulation (EC) 852/2004 in its current version. THIE Guideline for Good Agricultural and Hygiene Practices for Raw Materials used for Herbal Infusions - GAHP Annex 11 .



Annex 1

Values for the content of acid insoluble ash in the dry mass (d.m.) and for the loss on drying which as a rule should not be exceeded and essential oil in a selection of herbal and fruit infusions (mono product)^{1, 2}

Product	Max. acid insoluble ash % d. m.	Max. loss on drying %	Min. essential oil % d. m.
Apple (fruits)	1.0	13.0	
Camomile (flowers)	2.5	13.0	0.2
Fennel (fruits)	2.5	12.0	1.0
Hibiscus (flowers)	2.5	15.0	
Honey bush (herb)	1.0	11.0	
Lemon balm (leaves)	2.5	14.0	
Lemon verbena (herb)	3.5	12.0	0.15
Lemongrass (herb)	5.0	11.0	
Lime, Linden (flowers)	2.5	13.0	
Liquorice (roots)	2.0	12.0	
Mate (leaves)	1.0	10.0	
Nettle (herb)	5.0	14.0	
Peppermint (leaves)	2.5	13.0	0.6
Rooibos (herb)	2.0	12.0	
Rooibos, green (herb)	2.0	12.0	
Rose hip (fruits)	1.5	14.0	
Sage (leaves)	2.0	14.0	
Spearmint (leaves)	2.5	13.0	0.6
Sweet orange (flowers)	2.5	12.0	
Sweet orange (leaves)	3.0	12.0	

¹ In case of a blend the limits have to be calculated on the basis of the percentage of the composition.

² Flavourings and additional food ingredients have to be taken into consideration.



Annex 2

THIE's recommended analytical methods

SAMPLING

- ISO 948 / 1980: Spices and condiments-sampling

SAMPLE PREPARATION

- ISO 1572 / 1980: Tea – Preparation of ground sample of known dry matter content (Total Ash)
- ISO 2825 / 1981: Spices and condiments – Preparation of a ground sample for analysis (HCL – Ash; Volatile Oil)

METHODS OF ANALYSIS

- ISO 1573 / 1980: Tea – Determination of loss in mass at 103°C
- ISO 1575 / 1987: Tea – Determination of total ash
- ISO 1577 / 1987: Tea – Determination of acid-insoluble ash
- ISO 6571 / 1984: Spices, condiments and herbs – Determination of volatile oil content
- ISO 927 / 1982: Spices and condiments – Determination of extraneous matter content



Annex 3

Characteristics of common ingredients for herbal und fruit infusions

1	ANISE	<p>ANISE (fruits)</p> <p>Consist of the ca. 2 mm long, greyish to greyish brown, finely ridged and finely pubescent, obpyriform and laterally somewhat compressed stalked cremocarps from <i>Pimpinella anisum</i> L.. The mericarps have five more or less straight ridges. The odour is reminiscent of anethole, the taste is sweetish and aromatic (aniseed-like).</p>
2	APPLE	<p>APPLE (fruits)</p> <p>Consist of small pieces of the whole dried fruit from the genus <i>Malus</i>. Especially domesticated apple (<i>Malus domestica</i> Borkh.) and crab apple (<i>Malus sylvestris</i> (L.) Mill.) are used. The colour varies from white to off-white to brownish, depending on which type is used. The smell is mildly apple-like; the taste is sweet-sour. Pomace or similar residues from fruit juice production, pectin production etc. are not used.</p>
3	APPLE MINT	<p>APPLE MINT (leaves)</p> <p>Consist of the dried leaves and petioles from <i>Mentha suaveolens</i> Ehrh.. The margins of the leaves are covered with silver hair. It has a fruity aromatic smell and taste.</p>
4	BEE BALM	<p>BEE BALM (flowers)</p> <p>Consist of the dried red lipped flowers from <i>Monarda didyma</i> L.. The smell and taste are faintly lemony.</p>
5	BILBERRY	<p>BILBERRY (fruits)</p> <p>Consist of the dried fruits from <i>Vaccinium myrtillus</i> L.. Synonyms for the fruit include blueberry, huckleberry and wild berry. The blue-black fruits, which can be up to 1 cm in diameter, have blue flesh and juice. The taste is sweet and aromatic. Pomace or similar residues from fruit juice-, puree-production, etc. are not used.</p>
6	BITTER ORANGE	<p>BITTER ORANGE (leaves)</p> <p>Consist of whole or crushed dried leaves and petioles from certain varieties of <i>Citrus aurantium</i> L.. The leaves are large and oval, slightly pointed, with clearly articulated petiole and are more or less winged. The leaf is leathery, increases in thickness towards the margins, yellow-green and is dotted with oil reservoirs. The smell is aromatic and the taste is sweetish, aromatic and heavy.</p>
7	BITTER ORANGE	<p>BITTER ORANGE (flowers)</p> <p>Consist of the whole or crushed dried inflorescence and petals of certain varieties of <i>Citrus aurantium</i> L.. The smell is aromatic and the taste is sweetish, aromatic and heavy.</p>



8	BITTER ORANGE	<p>BITTER ORANGE (peels)</p> <p>Consist of the dried, whole or crushed fruit peels from <i>Citrus aurantium</i> L., whereby in addition to the outer layer (flavedo), parts of the spongy white parenchyma (albedo) are also present. The smell and taste are piquant and aromatic, typical of orange and slightly bitter. Product residues from etheric oil extraction, pectin production etc. are not used.</p>
9	BLACK CHOKEBERRY	<p>BLACK CHOKEBERRY (fruits)</p> <p>Consist of the dried fruits from <i>Aronia melanocarpa</i> (Michx.) Elliott. The roundish, 6 to 13 mm large, violet-black fruits have an intensively red coloured fruit flesh. The fruits have a sweet to sour, tart aroma. Pomace or similar residues from fruit juice-, puree-production etc. are not used.</p>
10	BLACKBERRY	<p>BLACKBERRY (leaves)</p> <p>Consist of the dried leaves and stems of <i>Rubus fruticosus</i> L.. Thorns are characteristically observed on the leaf veins, petioles and small pieces of the stems. The upper side of the leaves is green and has few hairs; the underside is felt-like. The smell is only faintly noticeable; the taste tends to be sour and astringent.</p>
11	BLACKCURRANT	<p>BLACKCURRANT (fruits)</p> <p>Consist of the dried fruits of the currant bush, <i>Ribes nigrum</i> L.. The smell is faint. The taste is sweet-sour, typical of blackcurrant. Pomace or similar residues from fruit juice-, puree-production, etc. are not used.</p>
12	BLACKCURRANT	<p>BLACKCURRANT (leaves)</p> <p>Consist of small pieces of the slightly wrinkled leaves with a dark green upper surface and light grey-green lower surface from <i>Ribes nigrum</i> L.. A scattering of dots can be seen on the lower surface which is due to the presence of shiny yellowish glandular trichomes (hand lens). The margins of individual leaves are coarsely serrated with pointed teeth. Yellow-green, grooved remnants of petioles are often present. The smell and taste of the dried plant material is faintly reminiscent of blackcurrants.</p>
13	CAMOMILE	<p>CAMOMILE (flowers)</p> <p>Consist of the dried whole or crushed inflorescence from <i>Matricaria recutita</i> L. (syn. <i>Matricaria chamomilla</i> L.) including a technically unavoidable amount of other aerial plant parts. The flower-heads have yellow tubular florets surrounded by a ring of white ligulate florets, the receptacle is light green to grey-green, conical and hollow. The smell and taste are aromatic; the aftertaste is slightly bitter.</p>
14	CHICHORY	<p>CHICHORY (roots)</p> <p>Consist of the roasted root from <i>Cichorium intybus</i> L.. The root is prickly and woody. It has a thick cortex and is surrounded by brown cork tissue. Sometimes pieces of roots have a fine striation. The root pieces turn brown during the roasting procedure. The smell and taste are typically similar to coffee.</p>
15	COCOA	<p>COCOA (seeds)</p> <p>Consist of seeds from <i>Theobroma cacao</i> L. The cocoa fruit is a cucumber-like fruit approximately 20 cm long and 10 to 12 cm wide, in which 40 to 60 white, bitter-tasting seeds (cocoa beans) are embedded in the mushy fruit flesh. The seeds are fermented for several days, through which they lose their bitterness and take on the brown colour and characteristic aroma. No seed coats are used.</p>



16	CORNFLOWER	<p>CORNFLOWER (flowers)</p> <p>Consist of the dried blue ligulate florets from <i>Centaurea segetum</i> Hill (syn. <i>Centaurea cyanus</i> L.). The smell is not clearly discernible; the taste faintly sweet to faintly salty.</p>
17	DAISY	<p>DAISY (flowers)</p> <p>Consist of the dried whole capitulum from <i>Bellis perennis</i> L. on which the whitish ray florets and the yellow tubular florets are visible. The dried plant material has a faintly perceptible smell and a faintly bitter taste.</p>
18	ELDER	<p>ELDERBERRY (fruits)</p> <p>Consist of the dried, very wrinkled, more or less spherical drupes from <i>Sambucus nigra</i> L.. The dark violet-black berries contain three elongated stones each, which in turn, contain one seed each within the hard endocarp. Occasionally fruit petioles are present. The smell is unique; the taste is sweet-sour with a characteristic aroma. Pomace or similar residues from fruit juice-, puree-production, etc. are not used.</p>
19	ELDER	<p>ELDER (flowers)</p> <p>Consist of the individual flowers that are stripped from the inflorescences (cymes, thyrses) by sieving, but sometimes, for operational reasons, are just cymes from <i>Sambucus nigra</i> L. cut into small pieces. The small flowers are off-white with connated, five-lobed corolla. They have a faint typical smell and a slimy-sweet strong aromatic taste.</p>
20	EUCALYPTUS	<p>EUCALYPTUS (leaves)</p> <p>The dried material consists of only the adult leaves and not the oval primary leaves from particularly eucalyptol-rich varieties of <i>Eucalyptus globulus</i> Labill.. The dense, leathery, grey-green, crumbly parts of the leaf blade show numerous brown lenticels. The main leaf vein is very prominent on the underside of the leaf. A strong aromatic smell reminiscent of camphor develops when the leaves are ground. The taste is bitter and slightly adstringent.</p>
21	FENNEL	<p>FENNEL (fruits)</p> <p>Consist of whole or crushed, mature, dried, yellow-green to brownish schizocarp or parts of the schizocarp or seed, often with remains of the pistil, fruit stalk and carpophore of <i>Foeniculum vulgare</i> var. <i>vulgare</i>. The seeds are slightly curved, about 10 mm long and have five light coloured, clear ribs. The variety <i>vulgare</i> has a very piquant smell and has a piquant aromatic, bitter-sweet taste. The smell of the variety <i>dulce</i> is pleasantly piquant and the taste sweetish, mildly piquant.</p>
22	GINKGO	<p>GINKGO (leaves)</p> <p>Consist of the dried, deep green to yellow-green leaves of <i>Ginkgo biloba</i> L., which usually has two-lobed leaves. The margins of the leaf are laterally smooth, otherwise slightly undulated. The leaf veins reticulate nervature runs parallel without a midrib often show dichotomous ramification. The smell is faint and characteristic of the species; the taste is slightly bitter.</p>



23	GINSENG	GINSENG (roots) Consist of the dried, cylindrical, tapering root of <i>Panax ginseng</i> C. A. Mey.. The root, which is covered with horizontal wrinkles on its upper half, divides several times from the middle downwards. The roots often bear head-like remains of truncated branches. The light yellow to light brown cortex of the root contains scattered small red-orange resin reservoirs. The flesh inside the root is white to yellowish, hard, horny and brittle. The smell is pleasant; the taste is in the beginning bitter and then sweet and mucilaginous.
24	GRAPEFRUIT	GRAPEFRUIT (peels) Consist of dried, whole or crushed fruit peels of <i>Citrus paradisi</i> Macfad. whereby in addition to the outer layer (flavedo), parts of the spongy white parenchyma (albedo) are also present. The smell and taste are piquant, aromatic, typical of grapefruit and slightly bitter. Product residues from etheric oil extraction, pectin production etc. are not used.
25	GREEK MOUNTAIN TEA	GREEK MOUNTAIN TEA (herb) Consist of the dried, aerial parts from <i>Sideritis spec.</i> that are gathered during the flowering period. The leaves and stems are aromatic.
26	HAZELNUT	HAZELNUT (leaves) Consist of the dried leaves of <i>Corylus avellana</i> L.. The leaves are roundish, slightly asymmetrically pointed; the leaf margin is doubly serrated. The primary subsidiary veins are very prominent. Single hairs are found along the veins on the lower surface of the leaf. The smell and taste are faint.
27	HEARTSEASE	HEARTSEASE (herb) Consists of the dried herb of <i>Viola tricolor</i> L.. The petals can be yellowish, white, blue or blue-violet. The dried plant material has a faintly perceptible smell and tastes slimy mucilaginous and sweet.
28	HIBISCUS	HIBISCUS (flowers [calyxes]) Consist of whole or crushed dried calyxes and epicalyxes from <i>Hibiscus sabdariffa</i> L. which are collected during the fruiting period. The sepals are red to dark violet and fleshy. White varieties are also used. The sepals are white to beige. They have a faint smell and a sour taste.
29	HONEY BUSH	HONEY BUSH (herb) Consists of the fermented or unfermented and dried aerial plant parts from <i>Cyclopia genistoides</i> (L.) Vent., <i>Cyclopia intermedia</i> E. Mey., <i>Cyclopia subternata</i> Vogel and/or <i>Cyclopia sesiliflora</i> Eckl. & Zeyh. which are collected during the flowering period. The smell and taste are honey-like and sweet.
30	LARKSPUR	LARKSPUR (flowers) Consist of the dried flowers, the wrinkled, blue or blue-violet sepals and petals as well as the wide brown-violet stamens from <i>Consolida regalis</i> Gray (syn. <i>Delphinium consolida</i> L.). The dried plant material has a faint honey-like smell and tastes mildly adstringent.
31	LEMON	LEMON (peels) The dried plant material is derived from fully developed, but not completely mature lemons of the species <i>Citrus limon</i> (L.) Burm.f.. The dried, whole or crushed fruit peels from <i>Citrus limon</i> (L.) Burm.f. consist of the outer layer (flavedo) as well as parts of the spongy white parenchyma (albedo). The outer pericarp layer is usually



		peeled off as a continuous spiral strip and dried. The small pieces are brownish yellow on the outside, dotted with dimples and whitish on the inside. They have a characteristic smell and a piquant, somewhat sour and faint bitter taste similar to lemon. Product residues from etheric oil extraction, pectin production etc. are not used.
32	LEMON BALM	LEMON BALM (leaves) Consist of the whole or crushed dried leaves and parts of the upper shoots from <i>Melissa officinalis</i> L.. The leaf margin is irregularly crenated or serrated. The upper leaf surface is sparsely covered with hair. The lower surface is almost hairless or is only sparsely covered with hair along the veins, but dotted with fine glands. The smell and taste are piquant, aromatic and reminiscent of lemon.
33	LEMON VERBENA	LEMON VERBENA (herb) Consists of whole or cut, dried leaves and upper shoot regions from the verbena family (Verbenaceae) <i>Aloysia citriodora</i> Palau (syn. <i>Lippia triphylla</i> (L'Hér.) Kuntze). The serrate leaves have a lemon-like smell and taste.
34	LEMONGRASS	LEMONGRASS (herb) Consists of the dried, cut aerial plant parts from <i>Cymbopogon spec.</i> The leaves have parallel venation and are light green to soft brown. The smell and taste are clearly lemon-like.
35	LIME	LIME (peels) Consist of the dried, whole or crushed fruit peels from <i>Citrus aurantiifolia</i> (Christm. & Panz.) Swingle, whereby in addition to the outer layer (flavedo), parts of the spongy white parenchyma (albedo) are also present. The smell and taste are piquant, aromatic, typical of lime and slightly bitter. Product residues from etheric oil extraction, pectin production etc. are not used.
36	LIME, LINDEN	LIME, LINDEN (leaves) Linden leaves consist of the stalked, usually heart-shaped and often asymmetrical leaves from <i>Tilia cordata</i> Mill., <i>Tilia platyphyllos</i> Scop. or <i>Tilia tomentosa</i> Moench (syn. <i>Tilia argentea</i> DC.). The leaves are more or less abundantly covered with simple or star-shaped hairs, usually denticulated or serrated to the point of being almost lobed and more rarely smooth-edged. The smell is faintly aromatic; the taste pleasantly aromatic.
37	LIME, LINDEN	LIME, LINDEN (flowers) Consist of the flowers of <i>Tilia cordata</i> Mill. or <i>Tilia platyphyllos</i> Scop. As far as <i>Tilia cordata</i> Mill. and <i>Tilia platyphyllos</i> Scop. are concerned, the fragments of pale yellowish green entire bracts with a distinct reticulate nervature, which are partly fused with the lower stalk, are characteristic. <i>Tilia tomentosa</i> Moench. (syn. <i>Tilia argentea</i> DC.) has densely pubescent bracts, its flowers have petalaceous staminodes. There are also yellowish white flowers with the five sepals and five free petals, numerous stamens, and a densely pubescent superior ovary. Occasionally, buds are also present. The odour is characteristic and faintly aromatic. The taste is sweetish, mucilaginous and pleasant.



38	LIQUORICE	<p>LIQUORICE (roots) Consist of the dried, unpeeled and/or peeled roots and stolons of <i>Glycyrrhiza glabra</i> L. In the cut condition, the drug is characterized by more or less cylindrical, roughly fibrous, distinctly lemon-yellow pieces which can be readily split longitudinally. The unpeeled liquorice includes small pieces with wrinkled, grey to brownish shreds of cork. The smell is faint, but characteristic, the taste is very sweet and mildly aromatic and liquorice-like.</p>
39	MALLOW	<p>MALLOW (flowers) Consist of the fused foliaceous 5-part calyx together with the epicalyx of three lanceolate segments from <i>Malva silvestris</i> L.; all the sepals are pubescent. There are five pale violet or dark bluish violet obovate petals, which are emarginate at the tip and which have a white beard at the base. The numerous stamens are fused to form a tube and the style has ten thread-like, violet stigmas. Occasionally, the flattened, 10-locular ovaries are present. The taste is typical and mucilaginous.</p>
40	MALLOW	<p>MALLOW (leaves) Consist of the roundish, three to seven-lobed, long-petioled leaves from <i>Malva silvestris</i> L.. The leaves have palmate venation and a notched, dentate leaf margin. The taste is typical and mucilaginous.</p>
41	MANDARIN ORANGE	<p>MANDARIN ORANGE (peels) Consist of the dried, whole or crushed fruit peels from <i>Citrus reticulata</i> Blanco (syn. <i>Citrus deliciosa</i> Ten.), whereby in addition to the outer layer (flavedo), parts of the spongy white parenchyma (albedo) are also present. The smell and taste are piquant and aromatic, typical of mandarin orange and faintly bitter. Product residues from etheric oil extraction, pectin production etc. are not used.</p>
42	MARIGOLD	<p>MARIGOLD (flowers) Consist of the dried flower heads from <i>Calendula officinalis</i> L., which comprise the golden yellow, three-toothed ligulate florets, small tubular florets and a green involucre. Sporadically bent, comb-shaped fruits are present. The dried plant material has a faint, typical smell and tastes slightly bitter and salty.</p>
43	NETTLE	<p>NETTLE (herb) Consists of the aerial parts of <i>Urtica</i> spec. of the genus <i>Urtica</i>, collected during the flowering period and dried. The leaf fragments are shrivelled and often crumpled up into a ball. The upper surface is greenish black and the lower surface is pale green. Pieces of the square stem are mostly flattened, green to brown and deeply grooved. Occasional pieces of the green flowering panicles may be present.</p>
44	PEONY	<p>PEONY (flowers) Consist of dried, dark red, wrinkled petals from <i>Paeonia officinalis</i> L.. It smells somewhat honey-like and has a tart and adstringent taste.</p>
45	PEPPERMINT	<p>PEPPERMINT (leaves) Consist of the whole or crushed dried leaves and parts of the upper shoot apices from <i>Mentha x piperita</i> L.. The leaves are thin, dark, occasionally light green and strongly serrated on the margins. Leaf veins and stems usually have a red-violet colouring. The stems are squarish. The smell and taste are very piquant, aromatic and cooling.</p>



46	RASPBERRY	<p>RASPBERRY (leaves)</p> <p>Consist of the dried leaves and stems from <i>Rubus idaeus</i> L.. The upper surface of the leaves is dark green to brownish green and the lower surface is covered with a dense tomentum. The margin is sharply serrated. The petioles and stems are green or have a reddish colour. The smell is faint; the taste tart.</p>
47	RASPBERRY	<p>RASPBERRY (fruits)</p> <p>Consist of the dried fruit parts of the aggregate fruits von <i>Rubus idaeus</i> L. The red fruit flesh has an intensively sweet as well as a characteristic aroma. Pomace or similar residues from fruit juice-, puree-production, etc. are not used.</p>
48	RED SANDALWOOD	<p>RED SANDALWOOD (wood)</p> <p>Consists of heartwood from the lower trunk of <i>Pterocarpus santalinus</i> L.f. that is free of sapwood. The wood fragments have a silky shimmer. Individual lengthwise cut vascular vessels and stripe-like medullary rays in the longitudinal fracture surfaces as well as numerous vessels and undulating lighter lines from the wood parenchyma in the cross fractures can be seen. The smell is faintly piquant; the taste is adstringent.</p>
49	ROOIBOS	<p>ROOIBOS (herb)</p> <p>Consists of the dried and cut aerial parts of the plant and leaves from <i>Aspalathus linearis</i> (Burm.f.) R. Dahlg.. The small pieces are oblong lanceolate in form.</p> <p>Fermented rooibos is red brown in colour; smell and taste are slightly sweet and reminiscent of black tea. Green rooibos is unfermented rooibos and has a greenish colour. The smell is reminiscent of hay; the taste is pleasantly spicy, herbal and mild.</p>
50	ROSE	<p>ROSE (petals)</p> <p>Consist of the dried petals from <i>Rosa spec.</i> As a rule, only the pink to brownish petals are used. The material smells and tastes typically of roses.</p>
51	ROSE HIP	<p>ROSE HIP (fruits)</p> <p>Consist of whole or crushed dried pseudo-fruits from <i>Rosa canina</i> L.. To a large extent rose hips are free of plant hair and contain a technically unavoidable content of seeds (up to 10%). The exterior of the pseudo-fruits are glossy red to red brown; the interior is light. The smell and taste are faintly sweet-sour.</p>
52	SAFFLOWER	<p>SAFFLOWER (flowers)</p> <p>Consist of the dried disk florets from <i>Carthamus tinctorius</i> L.. Its colour can vary from a rich yellow to red-orange. Smell and taste are faint and typical.</p>
53	SAGE	<p>SAGE (leaves)</p> <p>The dried plant material consists of small broken pieces of leaves from <i>Salvia officinalis</i> L. that are often stuck together due to the fine hair covering both sides of the leaves. The network of veins can be seen on the lower surface of the leaves. The material has a strong piquant, aromatic smell and a spicy bitter and astringent taste.</p>



54	SANDY EVERLASTING	<p>SANDY EVERLASTING (flowers)</p> <p>Consist of the dried stamineous, lemon yellow, glossy, imbricated and slightly erect involucre leaves of <i>Helichrysum arenarium</i> (L.) Moench.. The yellow orange tubular corollas are in the middle of the flower; the very small ray florets are usually not easily recognized. They have a yellow crown of hair. The smell of the dried plant material is weakly perceptible and tastes somewhat bitter and piquant.</p>
55	SEA BUCKTHORN	<p>SEA BUCKTHORN (fruits)</p> <p>Consist of the dried, oval, orange-coloured accessory fruits from <i>Hippophae rhamnoides</i> L.. The fruits have a sour taste. Pomace or similar residues from fruit juice-, puree-production, etc. are not used.</p>
56	SPEARMINT	<p>SPEARMINT (leaves)</p> <p>Consist of the whole or crushed, dried leaves and shoot apices from varieties of <i>Mentha spicata</i> L.. The veins are set deep into the upper dark green surface; the leaf surface bulges out; the veins are prominent on the leaf underside. The leaf margin features curved, pointed teeth. The stems are squarish. All parts smell and taste are spicy sharp, however lacks the cooling aftertaste of peppermint.</p>
57	STRAWBERRY	<p>STRAWBERRY (leaves)</p> <p>Consist of the dried leaves and individual stems with flowers of <i>Fragaria x ananassa</i> Duchesne. The upper surface of the leaf pieces are light green while the lower surface is covered with silky hair and the leaf edges are sharply serrated. The leaves have an unspecific smell; the taste is slightly bitter and aromatic.</p>
58	STRAWBERRY	<p>STRAWBERRY (fruits)</p> <p>Consist of small pieces of the dried accessory fruit from <i>Fragaria x ananassa</i> Duchesne. The small yellow achenes are on the surface of the fruit. The red fruit flesh has an intensively sweet and characteristic aroma. Pomace or similar residues from fruit juice-, puree-production etc. are not used.</p>
59	SUNFLOWER	<p>SUNFLOWER (petals)</p> <p>Consist of the dried ligulate florets from <i>Helianthus annuus</i> L.. The smell and taste are aromatic and sweetish.</p>
60	SWEET BLACKBERRY	<p>SWEET BLACKBERRY (leaves)</p> <p>Consist of the dried leaves and stems of <i>Rubus chingii</i> var. <i>suavissimus</i> (S. Lee) L.T. Lu (syn. <i>Rubus suavissimus</i> S. K. Lee.). Both sides of the green leaves are covered with hair; the margins of the leaf are doubly serrated. The three to seven-lobed form of the leaves and the prickles on the petioles are characteristic. The smell is only faintly noticeable; the taste is sweet, herbal with slightly bitter nuances.</p>
61	SWEET ORANGE	<p>SWEET ORANGE (leaves)</p> <p>Consist of whole or crushed dried leaves and petioles from different varieties of <i>Citrus sinensis</i> (L.) Osbeck. The leaves are large and oval, slightly pointed, with clearly articulated petiole. The leaf is leathery, increases in thickness towards the margins, yellow-green and is dotted with oil reservoirs. The smell is aromatic and the taste is sweetish, aromatic and heavy.</p>



62	SWEET ORANGE	SWEET ORANGE (flowers) Consist of the whole or crushed dried inflorescence and petals of certain varieties of <i>Citrus sinensis</i> (L.) Osbeck. The smell is aromatic and the taste is sweetish, aromatic and heavy.
63	SWEET ORANGE	SWEET ORANGE (peels) Consist of the dried, whole or crushed beige-yellowish to orange-reddish fruit peel from different varieties of <i>Citrus sinensis</i> (L.) Osbeck, whereby in addition to the outer layer (flavedo), parts of the spongy white parenchyma (albedo) are also present. The smell and taste is aromatically fresh, typical of orange and slightly bitter.
64	SWEET VIOLET	SWEET VIOLET (flowers) Consist of the dried dark violet, occasionally white or pink coloured flowers from <i>Viola odorata</i> L.. The spur-like protuberance of the lower petal is the same colour and overhangs the extensions of the green calyx. The material has a characteristic sweet smell and taste.
65	WALNUT	WALNUT (leaves) Consist of the dried pinna from <i>Juglans regia</i> L.. Both side of the dried and cut plant material is brownish green; the material is crumbly and somewhat stiff. On some areas, an almost rectangular tessellation can be seen along the smooth leaf margin and on the lower leaf surface that is formed by the leaf veins. The dried plant material has a faint aromatic smell and an adstringent faintly bitter, scratching taste.
66	WHITE JASMINE	WHITE JASMINE (flowers) Consist of the dried flowers from <i>Jasminum officinale</i> L.. The initially white flowers with five stellate petals are dirty white to brownish light yellow in the dried state. They possess a characteristic intensive flowery, aromatic smell and taste.
Caffeine-containing HFI		
67	COLA NUT	COLA NUT (seeds) Consist of the dried kernels from <i>Cola acuminata</i> (P. Beauv.) Schott & Endl. or <i>Cola nitida</i> (Vent.) Schott & Endl. (syn. <i>Cola vera</i> K. Schum.) from the genus <i>Cola</i> that are often collapsed into the two seed leaves. The appearance of cola seeds varies; most are spherical to ovoid or somewhat angular; the exterior is wrinkled, brown or red brown and the interior is cinnamon brown. They are very hard and have a granular structure. The dried plant material is odourless and tastes somewhat adstringent and bitter.
68	GUARANA	GUARANA (seeds) Consist of the glossy, dark brown seeds from <i>Paullinia cupana</i> H.B.K., which are spherical or are flattened on one side and have a large, light brown scar. The seed coat is thin, brittle and can be easily removed. The seeds have no clearly perceptible smell and the taste is bitter.
69	MATÉ	MATE (leaves) Consist of the dried, roasted or unroasted, crushed leaves and parts of the shoots of the yerba mate tree <i>Ilex paraguariensis</i> A. St.-Hil.. Depending on the treatment, mate leaves are light green or medium to dark brown in colour. Green mate smells mildly aromatic. It has a spicy, mildly astringent and slightly bitter taste. Roasted mate has a smoky, roasted smell. It has an adstringent, slightly burnt and mildly bitter taste.



Annex 4

Type of products

Category	Whole product	Coarse cut, square cut	Fine cut, coarse	Fine cut, fine	Granulated material	Liquid extract	Dry extract	Dry instant preparation	Liquid product
Raw materials	Dry HFI materials	Dry HFI materials	Dry HFI materials	Dry HFI materials	Dry HFI materials	Extract from HFI, additional ingredients possible	Extract from HFI, additional ingredients possible (e.g. carriers)	Extract from HFI, additional ingredients possible	Extract from HFI, additional ingredients possible
Particle size	Product dependent	2-15 mm	0.3-6 mm	0.2-2 mm	0.2-4 mm	Solution, dispersion	Depends on product and process	Depends on product and process	Solution
Application	Loose tea	Loose tea	Tea bag	Tea bag	Tea bag	Various food preparations	Various food preparations	Instant products Instant beverages	Ready to drink products, liquid concentrates
Example	Peppermint leaf	Coarsely cut peppermint leaf	Finely cut peppermint leaf	Finely cut peppermint leaf	Peppermint leaf mechanically compressed	Paste-like peppermint extract	Powdered peppermint extract prepared by drying a paste-like peppermint extract	Instant preparations to be dissolved in water for the preparation of a peppermint tea drink	Bottled ready-to-drink peppermint tea drink



Annex 5

THIE standard procedure for preparation of infusion liquors for sensory evaluation

Introduction

Herbal and Fruit Infusions (HFI) are foodstuffs which are traditionally consumed due to its health- and sensory properties. Besides the physical and chemical quality parameters described in **Annex 1**, the sensory characteristics are of special importance for the overall product quality. To characterise the sensory quality of HFI, 3 basic types of sensory examinations have to be assessed:

- **Colour of liquor**
- **Aroma (smell) of liquor**
- **Flavour (taste) (and possible “Off-Flavour”) of liquor**

For proper evaluation of the sensory quality, THIE recommends its Standard Procedure for Preparations of Infusion Liquors for Sensory Evaluation. For comparable results, it is important to define basic test parameters:

1. Water Quality

Flavour, colour and appearance (e.g. clearness, turbidity) of the liquor are affected by the hardness (mineral composition) of the water used for infusion. Therefore, water used for the sensory test should be demineralised, non-chlorinated water.

2. Water Temperature

THIE recommends freshly boiling water. This is to ensure that most of the valuable plant substances are extracted into the brew. Lower water temperatures normally result in an incomplete extraction, which also strongly affects the overall quality of the infusion.

3. Weight of HFI, Volume of Water for Infusion, Infusion Time

For reasons of homogeneity it is recommended to use higher weights for loose HFI / coarse cut materials. The following parameters are recommended:

- Fine cut: 2 g/ 0,2 L/ 5 min
- Coarse cut: 15 g/ 1 L/ 8 min



Procedure

- Weigh into a cup/glass beaker the amount of material given above for fine cut resp. coarse cut.
- Fill the cup/glass beaker with the corresponding amount of freshly boiling water.
- Ensure that HFI is properly wetted, e.g. stir with a tea spoon/glass stirrer.
- Allow to brew for the corresponding brewing time.
- Pour the liquor through a sieve to ensure that no extractives are retained in the infused material.
- Colour is evaluated optically against an agreed standard. The standard is prepared in the same way and at the same time.
- Aroma and flavour are evaluated by tasting against an agreed standard. The standard is prepared in the same way and at the same time.

Test results are assigned to the lot and documented.



Annex 6

THIE's recommended heavy metal specification for herbal and fruit infusions raw materials

Maximum levels for metals¹

Cadmium (Cd)	max. 1.0 mg/ kg
Lead (Pb)	max. 5.0 mg/ kg

Sampling methods, sample preparation and analysis, reporting and interpretation of results

Sampling methods, sample preparation and analysis, reporting and interpretation of results should be carried out according to Regulation (EC) No 333/2007 from 28 March 2007 in its current version.

Specific methods for the determination of cadmium, lead, copper and mercury are not prescribed.

Laboratories may use any validated method of analysis (where possible, the validation shall include a certified reference material) provided the selected method meets the specific performance criteria set out in Table 5 of EC No 337/2007.

The methods of analysis should be applicable to herbal and fruit infusions raw materials.

¹ Herbal and fruit infusions are regarded as composite foodstuffs. According to EU law there are only specific maximum limits in herbal and fruit infusions for copper (Cu) and mercury (Hg) set in Regulation (EC) No. 396/2005 in its current version and for some further metals in single ingredients for herbal and fruit infusions in Regulation (EC) No. 1881/2006 in its current version. Therefore, maximum levels in accordance with Member State regulation are set for further ingredients.

TEA & HERBAL INFUSIONS EUROPE

Formerly: European Tea Committee (ETC) and European Herbal Infusions Association (EHIA)



Version 2 | 19th January, 2011

Annex 7

THIE's recommended mycotoxin specification for herbal and fruit infusions raw materials

Maximum levels for mycotoxins¹

Aflatoxin B ₁	max. 2 µg/ kg
Aflatoxin B ₁ , B ₂ , G ₁ , G ₂ (as sum)	max. 4 µg/ kg

Sampling methods, analysis methods and requirements

Sampling methods, sample preparation and analysis, reporting and interpretation of results should be carried out according to Regulation (EC) No 401/2006 from 23 February, 2006 in its current version.

Specific methods for the determination of aflatoxin B₁ and the sum of aflatoxins B₁, B₂, G₁, G₂ for herbal and fruit infusions (dry) are not prescribed.

Laboratories may use any validated method of analysis (where possible, the validation shall include a certified reference material) provided the selected method meets the specific performance criteria set out in Annex I Chapter E for spices. The methods of analysis should be applicable to herbal and fruit infusions raw materials.

¹ Herbal and fruit infusions are regarded as composite foodstuffs. According to EU law there are only some specific maximum limits for aflatoxins in single ingredients for herbal and fruit infusions in Regulation (EC) No. 1881/2006 in its current version. Therefore, maximum levels in accordance with Member State regulation are set for further ingredients.



Annex 8

THIE'S recommended microbiological specification for trade in herbal infusions raw materials (dry)

MICROBIOLOGICAL LIMITS

<i>Aerobic Plate Count</i>	$\leq 10^8 / \text{g}$
<i>Yeasts (Mint excluded)</i> ¹⁾	$\leq 10^6 / \text{g}$
<i>Moulds</i>	$\leq 10^6 / \text{g}$
<i>E. coli</i>	$\leq 10^4 / \text{g}$
<i>Salmonella</i>	absent in 125 g

GUIDANCE VALUE ²⁾

<i>Enterobacteriaceae</i>	$\leq 10^6 / \text{g}$
---------------------------	------------------------

SAMPLING

- 5 random samples of 50 g are to be collected from the shipment.
- The 5 samples will be mixed to a composite sample.
- The composite sample is the basis for all laboratory investigations, including salmonella.

METHODS *

Aerobic Plate Count

Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 1: Colony count at 30 degrees C by the pour plate technique (ISO 4833-1:2013); Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 2: Colony count at 30 degrees C by the surface plating technique (ISO 4833-2:2013 and ISO 4833-2:2013/Cor 1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Yeasts and Moulds

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts and moulds – Part 2: Colony count technique in products with water activity less than or equal to 0.95 (ISO 21527-2:2008)

E. coli

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli – Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-1:2001) or Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-



glucuronidase-positive *Escherichia coli* – Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-2:2001); European Reference Method according to Regulation (EC) No 1441/2007

Salmonella

Microbiology of the food chain -- Horizontal method for the detection, enumeration and serotyping of *Salmonella* -- Part 1: Horizontal method for the detection of *Salmonella* spp. (ISO/DIS 6579-1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Enterobacteriaceae

Microbiology of food and animal feeding stuffs – Horizontal methods for the detection and enumeration of Enterobacteriaceae – Part 2: Colony – count method (ISO 21528-2:2004); European Reference Method according to Regulation (EC) No 1441/2007

1) *For mint no yeast specification is applicable due to the high natural yeast load.*

2) *THIE recommends monitoring Enterobacteriaceae as an additional hygienic parameter.*

* Other methods can be used if they are checked against a reference method (official method and suitability tested [recovery of reference microorganisms]).



Annex 9

THIE'S recommended microbiological specification for herbal infusions (dry)

MICROBIOLOGICAL LIMITS

<i>Aerobic Plate Count</i>	$\leq 10^7 / \text{g}$
<i>Yeasts</i>	$\leq 10^5 / \text{g}$
<i>Moulds</i>	$\leq 10^5 / \text{g}$
<i>E. coli</i>	$\leq 10^3 / \text{g}$
<i>Salmonella</i>	absent in 125 g

GUIDANCE VALUE ¹⁾

<i>Enterobacteriaceae</i>	$\leq 10^5 / \text{g}$
---------------------------	------------------------

SAMPLING

- 5 random samples of 50 g are to be collected from the shipment.
- The 5 samples will be mixed to a composite sample.
- The composite sample is the basis for all laboratory investigations, including salmonella.

METHODS *

Aerobic Plate Count

Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 1: Colony count at 30 degrees C by the pour plate technique (ISO 4833-1:2013); Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 2: Colony count at 30 degrees C by the surface plating technique (ISO 4833-2:2013 and ISO 4833-2:2013/Cor 1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Yeasts and Moulds

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts and moulds – Part 2: Colony count technique in products with water activity less than or equal to 0.95 (ISO 21527-2:2008)



E. coli

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli* – Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-1:2001) or Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli* – Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-2:2001); European Reference Method according to Regulation (EC) No 1441/2007

Salmonella

Microbiology of the food chain -- Horizontal method for the detection, enumeration and serotyping of *Salmonella* -- Part 1: Horizontal method for the detection of *Salmonella* spp. (ISO/DIS 6579-1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Enterobacteriaceae

Microbiology of food and animal feeding stuffs – Horizontal methods for the detection and enumeration of Enterobacteriaceae – Part 2: Colony – count method (ISO 21528-2:2004); European Reference Method according to Regulation (EC) No 1441/2007

ADDITIONAL REMARK

Herbal infusions are parts of plants which are intended for infusing with freshly boiling water and brewing for at least 5 minutes/5-x minutes.

¹⁾ *THIE recommends monitoring Enterobacteriaceae as an additional hygienic parameter.*

* Other methods can be used if they are checked against a reference method (official method and suitability tested [recovery of reference microorganisms]).



Annex 10

Position Paper on irradiation

Legal background

On 30th March 1999, the Official Journal published the framework Directive 1999/2/EC of the European Parliament and Council on the approximation of the laws of the member states concerning foods and food ingredients treated with ionising radiation as well as the implementing Directive 1999/3/EC including a list of foodstuffs authorised for irradiation treatment and maximum radiation doses. Currently, the list only includes “dried aromatic herbs, spices and vegetable seasonings”. National authorisations allowing the irradiation of certain foodstuffs within member states can be maintained until the completed EU-wide list of products authorised for food irradiation enters into force (Official Journal C 174 of 20th July 2002).

Implications for herbal infusions

Herbal infusions may contain a whole variety of different plant raw material, such as leaves, blossoms, fruits, seeds, bark, roots etc. A considerable amount of this raw material is also used for other purposes apart from producing herbal infusions, for instance as spices, raw material for plant extracts and food supplements, etc.

As the EU Directive allows the irradiation of “dried aromatic herbs, spices and vegetable seasonings”, the question arises whether dried herbs and spices used in herbal infusions may be irradiated:

- The wording of the Directive contains no indication of specific uses of the dried aromatic herbs and spices, so that the use of dried aromatic herbs and spices in herbal infusions is covered by the wording of the Directive; i.e. those ingredients can be irradiated, provided that proper labelling is made.
- The second “whereas” explains: “Dried aromatic herbs, spices and vegetable seasonings are frequently contaminated and/or infested with organisms and their metabolites which are harmful to public health”. This “whereas” applies regardless of the purpose for which the “dried aromatic herbs, spices and vegetable seasoning” are actually used.
- Dried aromatic herbs and spices are a minor crop and in practice, when deciding on irradiation, it is often not possible to say for what production purpose they will finally be used.

Taking all these aspects into consideration, THIE’s position is as follows:

- Herbal infusions are considered to be natural products and THIE is not pro-active concerning irradiation of herbal material.



- Nevertheless, as irradiation is allowed for “aromatic herbs, spices and vegetable seasonings”, THIE is of the opinion that this authorisation also applies to any material used for the production of herbal infusions, e.g. camomile, verbena, lime-blossom, etc.
- If herbal material is subjected to irradiation, this must be indicated by proper labelling.
- Irradiation should not replace good hygienic practices.

Unfortunately, Member States have different interpretations of the wording “dried aromatic herbs, spices and vegetable seasonings”. Therefore, an agreed European position is necessary, which shall lead to an explanation of the wording “dried aromatic herbs” (what kind of herbs?) or to the extension of the EU-wide list to herbal materials used in infusions.



Annex 11

GUIDELINES FOR GOOD AGRICULTURAL AND HYGIENE PRACTICES FOR RAW MATERIALS USED FOR HERBAL AND FRUIT INFUSIONS (GAHP) (Former EHIA document)

CONTENT

- I. INTRODUCTION
- II. SCOPE
- III. DEFINITIONS
- IV. BACKGROUND TO GAHP
- V. GUIDELINES FOR CULTIVATION OF RAW MATERIALS FOR HERBAL AND FRUIT INFUSIONS IN THE COUNTRIES OF ORIGIN
 - Part 1 Basic requirements applicable to all operators (growers, traders, processors) in the countries of origin
 - 1. Cultivation
 - 2. Harvesting
 - 3. Drying
 - 4. Packing
 - 5. Storage and Transport
 - 6. Equipment
 - 7. Personnel & Facilities
 - 8. Documentation & Traceability
 - 9. Training
 - 10. Quality Control
 - 11. Information
 - Part 2 Additional requirements applicable to organised establishments that can support implementation and operation of HACCP
- VI. GUIDELINES FOR IDENTIFICATION, EVALUATION AND CONTROL OF FOOD SAFETY HAZARDS OF HERBAL AND FRUIT INFUSIONS IN ESTABLISHMENTS WITH A CERTAIN DEGREE OF ORGANISATION
 - Part 1 Hazard analysis: Identification of potential food safety hazards of raw materials for herbal and fruit infusions
 - Part 2 Description of control measures and corrective actions:
 - Part 2 a Measures to be applied by the processor to prevent, eliminate or reduce potential food safety hazards in raw materials for herbal and fruit infusions to acceptable levels
 - Part 2 b Summary of potential food safety hazards identified in raw materials for herbal and fruit infusions as well as measures to be applied by the processor to prevent, eliminate or reduce them to acceptable levels



Part 3 Examples for default documents for the HACCP system:
Rose-hip harvesting and processing in Chile

Part 3 a Rose-hip harvesting and processing in Chile (example for implementation of GAHP)

Part 3 b Documentation HACCP Plan:

Drying raw material for herbal and fruit infusions in organised establishments (e.g. Drying Rose-hip in Chile)

Part 4 Flow Diagram for controlling food safety hazards during processing

VII. ANNEXES

Annex 1 THIE's recommended microbiological specification for trade in raw material used for herbal infusions

Annex 2 THIE's recommended microbiological specification for herbal infusions (dry)

Annex 3 References and literature



I. INTRODUCTION

Tea & Herbal Infusions Europe (THIE) readily acknowledges its responsibilities for food safety. In recognition of these obligations in 1993 EHIA (European Herbal Infusions Association), the predecessor of THIE, produced a Code of Good Agricultural Practice (3) that details the manner in which they ensured the safety of the products they placed in the marketplace.

The introduction of the EU Food Hygiene Regulation (1) (2) with its *farm to fork* approach to managing food safety coupled with its legal requirement to use the Hazard Analysis Critical Control Point (HACCP) system (12) to ensure food safety has caused THIE to consider the implications of these 'new' rules particularly in relation to their primary raw materials. Although the formal application of the HACCP system will not initially be legally required for primary production there is a requirement to identify and control possible hazards present in primary raw materials, with these being addressed, where possible, in guidelines or codes of practice.

Raw Materials for herbal and fruit infusions are agricultural products that are grown widely throughout the world in both developed and developing countries either as cultivated crops or in the wild. GAHP may be applied unconditionally to cultivated crops, the same is not true of those that are uncultivated and 'wild gathered'. THIE members processing raw materials source them from suppliers employing controlled cultivation (with whom they frequently have long term relationships) as well as those whose raw material is 'wild gathered'.

With cultivated raw materials THIE members can exert some control over food safety issues at an early stage, for example by advising on the application of GAHP–Guidelines when preparing agreements.

'Wild gathered' raw materials grow in the wild rather than being cultivated and are harvested in a classical cottage-garden industry format by local smallholders. They sell them daily to a local collector who accumulates a truckload that is then sold in bulk to buyers representing the processors.

THIE members take into account the different growth conditions of their raw material, whether cultivated or gathered wild, and also of the different food safety aspects arising from the parts of the plants which are used, by reflecting this appropriately in their HACCP plan as the individual case requires. These Guidelines provide a basis for member companies to establish a procedure which is based on the HACCP system.

But they do not replace an in-house approach for food safety management. Furthermore, it must be pointed out that the measures have to be set according to the extent of the quality assurance and hygiene control in previous stages in the food chain when setting up the above-mentioned procedure.

Raw material for herbal and fruit infusions is commonly traded in dried form. Drying takes place directly after harvesting and is carried out in the countries of origin. There are essentially two situations to consider:

- Firstly: The material can be grown, gathered and dried in the traditional manner by smallholders and then sold to a professional trader. HACCP does not apply to smallholders. However, it does apply to professional traders since they can provide the required degree of organisation as specified by the EU Regulation on Food Hygiene (1) (2) for the application of HACCP (Considerations 9, 2nd sentence, and 16, 1st sentence).



- Secondly: Freshly gathered material is taken to a special drying plant by various different producers or collectors. In such cases the necessary organisation is expected to be available to support the implementation of HACCP.

These guidelines give THIE members an instrument for exerting influence on cultivation and processing, thereby encouraging the application of GAHP and HACCP at the various stages of production. These guidelines provide specialised knowledge for THIE members on how to identify, evaluate and control potential food safety hazards so that they are in a position to integrate them in their own HACCP-Plans.

Consequently, this document has been produced for use by THIE members to:

- Encompass the differing food safety issues relating to both cultivated and ‘wild gathered’ raw material for herbal and fruit infusions,
- Facilitate a common approach to discharging their food safety responsibilities,
- Define from which stage of production onwards a HACCP system should be implemented.
- Assist in discussions with national authorities regarding compliance with the EU Hygiene Regulation in relation to manufactured herbal and fruit infusions and their primary raw materials and
- Produce national guidelines or codes of practice where appropriate.

National and European regulations for herbal and fruit infusions are enforced without prejudice to the guidelines.



II. SCOPE

These guidelines (GAHP) apply to:

- Raw materials for herbal and fruit infusions.
- Cultivation, harvesting and manufacturing in the country of origin.
- In-House HACCP Plan of THE member companies.

- Excluded from these guidelines (GAHP) are:
 - Raw materials for pharmaceutical preparations.
 - 'Tea' (Infusions) prepared from *Camellia sinensis*.



III. DEFINITIONS

- **Raw materials for herbal and fruit infusions** are plants and parts of plants that do not originate from the tea plant (*Camellia sinensis* L. Kuntze) and are intended for use by brewing with freshly boiling water. Plants and parts of plants commonly used in herbal and fruit infusion are listed in the THIE Inventory List of Herbals Considered as Food in its current version available under www.thie-online.eu. This list is not exhaustive and updated regularly. The Novel Food Regulation (EC) 258/1997 applies without prejudice.
- **‘Wild gathered’** raw materials are defined as those that grow in the wild rather than being cultivated and are harvested in a classical cottage-garden industry format.



IV. BACKGROUND TO GAHP

- The Guidelines for Good Agricultural and Hygiene Practice (GAHP) are guidelines to the production and handling of raw materials for herbal and fruit infusions. This document is a revised version of a previous document (3) and has been further developed from both the literature cited in Annex 3 and the expertise of THIE members, taking into consideration the relevant requirements for cultivated and 'wild gathered' raw materials of the EU Regulation on the Hygiene of Foodstuffs (1) (2).
- The objectives are to ensure that herbal and fruit infusions are:
 - a. safe for human consumption.
 - b. produced hygienically to minimise microbiological contamination and to minimise the formation of mould toxins (mycotoxins).
 - c. produced with care to minimise physical and chemical contaminants.
 - d. in line with HACCP requirements by identifying, evaluating and controlling the potential food safety hazards from raw materials.
 - e. of the highest quality.
- This document provides guidelines designed to minimise contamination of materials at the primary producer level.
- Herbal and fruit infusion raw materials are exposed to microbiological and other types of contamination as well as other potentially detrimental conditions from a wide variety of sources in the field and on the farm. Such contamination cannot always be removed effectively by washing and peeling techniques that are applicable to many other crops, nor is microbial load significantly reduced by the low temperature drying necessary for the conservation of colour and flavour characteristics of infusions.
- There are no generally applicable methods for reducing the microbial load of dried herbal and fruit materials. Farmers and distributors are encouraged to devise practical measures for their workers to implement the code.
- All working practices should comply with the General Principles of Food Hygiene of Codex Alimentarius (12) and the EU Regulation on the Hygiene of Foodstuffs (1) (2).
- It is intended that company buyers should circulate these Guidelines to producers and distributors of raw materials for herbal and fruit infusions with a strong recommendation to comply with them. Application of the Guidelines can be advised when preparing agreements.
- Apart from Part 1, subpara. 1. (Cultivation), Chapter V of the guidelines applies to wild gathering as well as cultivation on fields. HACCP considerations in Chapter VI also apply to processing in establishments with a certain degree of organisation for raw material either 'wild gathered' or cultivated on fields.
- To discharge their responsibilities for food safety relating to the raw materials the processor must identify what food safety hazards are posed by the raw materials and ensure that these are taken into account within his own operation. The potential food safety hazards which can be caused by microbiological, chemical and physical factors in raw materials are identified in Chapter VI, Part 1 (hazard analysis). The measures to be applied to control/handle them and corrective actions are described in Chapter VI, Part 2. Examples for default documents for the HACCP system can be found in Chapter VI, Part 3: Part 3a describes harvesting and processing of typical 'wild gathered' raw material. Using this example, Part 3b illustrates a HACCP Plan for drying in establishments with a



certain degree of organisation. Part 4 contains a flow diagram for controlling food safety hazards during processing in establishments with a certain degree of organisation.

- The Guidelines will be available in different languages to improve circulation, adoption and thus their effectiveness.



V. GUIDELINES FOR CULTIVATION OF RAW MATERIALS USED FOR HERBAL AND FRUIT INFUSIONS IN THE COUNTRIES OF ORIGIN

Part 1 Basic requirements applicable to all operators (growers, traders, processors) in the countries of origin

1. Cultivation

- 1.1 Raw materials for herbal and fruit infusions are not cultivated in soils contaminated with for example, sewage sludge, heavy metals, pesticides, radioelements and other industrial chemicals. Growing plants (other than herbal and fruit materials) which might cause a possible contamination, e. g. due to their active principles, before growing herbal and fruit material or growing such plants (other than herbal and fruit materials) on a neighbouring field, has to be checked carefully to prevent cross contamination.
- 1.2 The soil is well drained, and irrigation (if necessary) is regularly and uniform to avoid water logging of the soil and high humidity microclimates which promote mould growth and fungal infection.
- 1.3 Water used for irrigation should be fit for the purpose, i.e. substantially free from contaminants, such as faeces, heavy metals, agrochemicals (e. g. pesticides, fertilisers) and toxicologically hazardous substances. The water complies with local (national) standards where they exist.
- 1.4 Organic fertilisers (no human faecal material) are well composted before use. Fertilisers are only applied after the final harvest and before planting. When using chemical fertilisers, manufacturers' instructions for use will be followed.
- 1.5 No cattle is allowed in the cultivation area.
- 1.6 No sewage sludge is used for fertilisation.
- 1.7 Plants are spaced to minimise weed growth. Weeding is done regularly and dead weeds with other plant debris are removed from the crop cultivation area and destroyed to minimise fungal infection and pest damage.
- 1.8 Pesticides are only used when necessary. In case of need, they have to be used with the minimum effective amount of authorised pesticides. Only pesticides authorised for use in the EU, or pesticides for which an EU MRL is fixed may be applied. Application must be carried out at pre-harvest intervals advised by the manufacturer of the chemicals used. The application may only be carried out by qualified personnel with the use of authorised equipment.
- 1.9 Genetically modified seeds should not be used. If they are used, the seeds and their use must be authorised by EU-authorities according to Directive 2001/18/EC (22) and must fulfil the respective legal requirements (notably 22, 23, 24). The customer must be informed and each sack has to be clearly labelled with the fact that genetically modified seeds have been used.



2. Harvesting

- 2.1 Crop harvesting should not be carried out in wet (ground moisture, dew or rain) or high humidity conditions, i.e. wherever possible harvesting should be carried out in dry, low humidity conditions. In this way the growing of mould and possible formation of mycotoxins can be avoided.
- 2.2 Harvesting equipment must be clean and well maintained.
- 2.3 Where mechanical cutters/harvesters are used, the machine parts in contact with the crop, together with their housing, must be cleaned regularly and kept free of accumulated plant material and other debris.
- 2.4 Cutter blades are adjusted to avoid soil pick up.
- 2.5 All containers used for primary collection of the crop must be kept free from previously accumulated plant material, and when not in use it must be kept in a dry place free from vermin and inaccessible to farm and domestic animals as well as birds.
- 2.6 Damaged and spoiled crop material will be sorted and discarded.
- 2.7 Harvested material will be collected in dry sacks, baskets, trailers or hoppers. It must not be collected on the ground. The collecting container is fit for the purpose, it is not made from plants which might cause a contamination due to their active principles.
- 2.8 Mechanical damage, which promotes composting, should be avoided:
 - mechanical compaction.
 - plastic sacks will not be used during harvesting (exception: woven plastic sacks which allow exchange of humidity, e.g. woven polypropylene).
 - sacks must not be overfilled to ensure a proper seal.
 - compression with stacking should be avoided.
- 2.9 The time between harvest and transport of crop to the drying site should be kept as short as reasonably practicable, in any case it is necessary to avoid a temperature rise of harvested material due to composting or mould grow (see also 3.5).
- 2.10 The harvested crop is protected from all types of pests (rodents, insects); farm and domestic animals as well as birds.
- 2.11 Water that comes in contact with raw material (e.g. washing water) must not contaminate the raw material.
- 2.12 The harvested crop must not be allowed to stand for extended periods in direct sunlight and must be protected from rain.

3. Drying

- 3.1 The crop will be unloaded and unpacked as soon as possible on arrival at the drying facilities.
- 3.2 Buildings used for drying crops are well ventilated and should never be used for livestock.
- 3.3 The buildings should be constructed to protect the crop from birds, insects, rodents, farm and domestic animals.
- 3.4 Drying racks will be kept clean and regularly maintained, particularly in order to avoid cross contamination with other crops or foreign matter.



- 3.5 Crops are placed in thin layers, on wire mesh racks standing off the floor to allow free air circulation, and stirred intermittently to ensure uniform drying and prevent composting or mould growth.
- 3.6 Drying on the floor and in direct sunlight is not recommended. With drying processes using oil, natural gas or wood firing, the fuel, the exhaust fumes and gas emissions must not come in direct contact with the herbal and fruit infusions raw materials. Drying furnaces must be maintained in good working order to prevent contamination with gas emissions. Direct drying is only allowed when using butane or propane. The temperature and drying time must be sufficient to give properly dried products and must be selected in such a way that the flavour and the active components (e.g. essential oils) are maintained as much as possible.
- 3.7 Drying furnaces as well as other suitable drying chambers have to be kept clean in order to prevent cross contamination with crops, substances dried before. All equipment has to be maintained and inspected regularly to ensure food grade processing. Drying areas are non-smoking areas.
- 3.8 Dried crops are inspected and sieved or winnowed to remove discoloured, mouldy and damaged material and soil, stones and other foreign matter. Sieves must be kept clean and maintained regularly, particularly in order to avoid cross contamination with other crops or foreign matter.
- 3.9 Contamination of the raw materials with waste should be prevented through appropriate measures, such as strict physical separation of harvested materials from waste containers. Clearly marked waste bins must be provided, emptied daily and cleaned.
- 3.10 Dried and drying crops must be protected from infestation, farm and domestic animals as well as birds.
- 3.11 Dried crops should be packed as soon as possible for protection and to lessen the opportunity of pest infestation, as well as to prevent ingress of foreign matter.

4. Packaging

- 4.1 Damaged material and foreign matter have to be eliminated before packing.
- 4.2 The sound dried crop is packed in clean dry sacks, bags or boxes, preferably new. Labelling must be clear and appropriate and must not contaminate the harvested material. The details on the label should be sufficient to facilitate lot traceability.
- 4.3 Packaging materials are stored in a clean dry place free from pests and inaccessible to farm and domestic animals and birds. It is stored in such a way that it should not be contaminated with for example chemical substances (e. g. cleaning agents, smoke) and foreign materials (e. g. jewellery) which come from human environment as far as reasonably practicable.
- 4.4 Re-usable packaging materials such as jute sacks, woven plastic bags, etc. should be well cleaned and dried before re-use. The re-usable packaging material should only be used for packaging raw materials for herbal and fruit infusions. Re-usable packaging material should be inspected prior to use.
- 4.5 Packaging materials must be suitable for the raw materials being packed. Wherever possible, the packaging materials used should be agreed between supplier and processor.



5. Storage and Transport

- 5.1 Packed dried crop is stored in a dry, well-ventilated building, with minimal variation in diurnal temperature.
- 5.2 The packed crop has to be stored in a dry place away from the wall and off the ground so that sufficient space for protection measures against pests is available. Furthermore, it has to be protected from pests, farm and domestic animals as well as birds. It has to be stored in such a way that the risk of contamination with objects and substances from human environment (e. g. smoke, jewellery) is reduced so far as reasonably practicable.
- 5.3 Shutter and door openings have to be protected by wire screens to keep out pests (insects and rodents), birds and farm and domestic animals. Appropriate pest-control measures, such as traps, electrical insect-control devices, as well as measures for identifying an infestation (such as pheromone traps) will be used.
- 5.4 It is recommended that packed dried crops should be stored:
 - in buildings with concrete floors or similar easy-to-clean floors,
 - on pallets,
 - away from the wall,
 - well separated from all other crops whenever cross-contamination is possible.
 - Storage areas should be non-smoking areas.
- 5.5 For bulk deliveries the use of vented containers and transport vehicles is highly recommended to minimise mould risks.
- 5.6 The transport vehicles are clean and in good condition in order to protect the crop from contamination.
- 5.7 In case of bulk transport of crop (e. g. unpacked crop in direct contact with the contact surface of the food transportation unit and the atmosphere), it is necessary to ensure that cross contamination with e. g. other crops (e. g. with other previously transported plant material), chemical substances or foreign matter is avoided.
- 5.8 During transport an appropriate spatial separation between driver and crop is recommended. If other crops or goods are transported at the same time, it is recommended to separate them in an appropriate way.
- 5.9 Fumigation* to control pests should only be applied where necessary; only trained personnel should carry out fumigation. Only fumigants that are authorised in the EU may be used. Residues in the fumigated raw materials must be within the EU limits or national or customer limits where they are lower.
- 5.9 Fogging of warehouses and other parts of buildings in which herbal and fruit infusion raw materials are stored or processed must only be done by trained personnel and with preparations that are authorised in the EU.
- 5.10 Chemicals used as pesticides, fumigants etc., have to be kept in a separate, closable area.

* 'Fumigation' is a generic term and encompasses the application of any legally approved technique for the control and elimination of insect infestation.



6. Equipment

- 6.1 Equipment used for the gathering, handling and processing of crops can be easily cleaned to minimise contamination and cross-contamination with other crops. Dry cleaning is recommended. Where the use of water is unavoidable, equipment will be dried as quickly as possible. The used equipment should be inspected prior to use.
- 6.2 All equipment is installed to allow easy access and is well maintained and cleaned regularly.
- 6.3 Equipment is made of appropriate material (e.g. stainless steel). The use of wood should be avoided wherever possible.
- 6.4 Wooden equipment (e.g. pallets, hoppers etc.), if used, must not have chemical treatments, such as chemical fungicides, which could be a source of taint, (e.g. chlorophenols). Methyl bromide should not be used for fumigation of pallets or any other wooden packaging.

7. Personnel & Facilities

It is a basic requirement that all persons having contact with raw materials should observe a strict level of personal hygiene. The following requirements should apply as much as possible.

- 7.1 Personnel handling food material should have access to suitable changing rooms and toilets with hand washing facilities.
- 7.2 Personnel must not be permitted to work in the herbal and fruit infusions raw material handling area, if they are known to be suffering from, or carriers of, diseases likely to be transmitted through food, including diarrhoea and if there is a likelihood of direct or indirect contamination. Any person so affected is to report immediately to his supervisor about the illness directly after outbreak and, if possible, has to undergo a medical examination. The person can only restart work, if there is no obstacle anymore (e.g. the medical certificate).
- 7.3 Personnel with open wounds, sores and skin infections should be transferred away from herbal and fruit infusions raw material handling areas until completely recovered, if there is a likelihood of direct or indirect contamination.
- 7.4 Personnel should always wash their hands when personal cleanliness may affect food safety, for example: at the start of food handling activities, immediately after using the toilet, and after handling any contaminated material, where this could result in contamination of other food items.
- 7.5 Food handlers should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head covering, and footwear.
- 7.6 People engaged in food handling activities should refrain from behaviour which could result in contamination of food, for example: smoking, spitting, chewing or eating, sneezing or coughing over harvested material and dried crops (packaged or unpackaged).
- 7.7 Personal effects such as jewellery, watches, pins or other items should not be worn or brought into food handling areas if they pose a threat to the safety and suitability of food.

8. Documentation & Traceability

- 8.1 Farmers keep records about
 - the use of fertiliser,



- the use of pesticides,
- previously cultivated plants and treatments such as fertilisers and pesticides (for annual plants and cultivation that requires field rotation)
- any occurrence of pests or diseases that may affect the safety of raw materials used for herbal and fruit infusions
- the use of fumigants or fogging substances,
- results of analyses (e. g. loss in mass) carried out on samples for each batch of harvested material. They shall be available for the customers on request.

These documents are to be kept for at least 5 years.

8.2 The buyer must be advised each time a batch or delivery of raw material is fumigated and this must also be recorded in the shipment papers.

8.3 Suppliers are advised to (where necessary and possible):

- be able to identify the incoming goods (in order to follow its source of supply).
- install a documented purchasing control system.
- provide accompanying documents which carry all relevant information available for the customers on request.

Such requests may be part of the food business contractual arrangements.

9. Training

Personnel, whether handling crops or managing crop production, have to be trained in adequate production techniques and instructed in food hygiene matters (particularly personal hygiene), respectively. This can be achieved by using experts from local agricultural institutes or those provided by the buyers. Training should also aim to make staff familiar with the content of these guidelines. The training resp. instruction should be done regularly and commensurate with their work activity. The training and instruction, respectively has to be documented.

10. Quality Control

10.1 Compliance with the recommendations of this GAHP should be checked through regular audits or inspection visits by representatives of producer and buyer with expertise in good agricultural and hygienic practice.

10.2 Specification for raw materials should be agreed between producer and buyer[†]; these may as a minimum include the following safety criteria: microbial load, pesticide residues, heavy-metal content, and radioelements.

Further product-related parameters such as purity criteria, visual and sensory properties, active principles and characterising constituents, other chemical residues and mycotoxins may be included.

[†] See also

a) *THIE Compendium of Guidelines for Herbal and Fruit Infusions, Extracts thereof and Preparations, Tea & Herbal Infusions Europe, Hamburg, current version available at www.thie-online.eu (17)*

b) *THIE's Recommended Microbiological Specification for Trade In Herbal Infusion Raw Materials (18)*



11. Information

If the farmer identifies a possible food safety hazard could come from the raw materials, he must inform the purchasing departments of the buyers of the raw material immediately. When there is a risk to human health, the information will be passed to the responsible authorities.



Part 2 Additional requirements applicable to organised establishments that can support implementation and operation of HACCP

In addition to Part 1 of the present guidelines, Annex 2 of the EU Food Hygiene Regulation (1) (2) contains additional food hygiene requirements which establishments with a certain degree of organisation (as described in the introduction of this present document) are expected to comply with.

A key requirement is the development of food safety programmes and procedures based on the HACCP principles contained in the Codex Alimentarius (12). Chapter VI, Part 3 of the present guidelines includes examples for default documents according to the HACCP system.



VI. GUIDELINES FOR IDENTIFICATION, EVALUATION AND CONTROL OF FOOD SAFETY HAZARDS IN ESTABLISHMENTS WITH A CERTAIN DEGREE OF ORGANISATION

Part 1 Hazard analysis: Identification of Potential Food Safety Hazards of Raw Materials used for Herbal and Fruit Infusions

1. Preface

The potential food safety hazards posed by 'wild gathered' and cultivated raw materials are identified in this Part.

The raw materials received by the European processor may have undergone none or some processing before receipt; this will clearly vary and not all possible variations can be covered in these guidelines. However, by way of illustration a typical process relating to harvest and processing of rosehip is given in Chapter VI, Part 3a.

2. Description of Potential Food Safety Hazards

Each process step can be analysed and the potential food safety hazards identified; for all raw materials the food safety hazards will generally fall into the following categories:

- Chemical contamination
- Foreign matter
- Microbiological contamination

2.1 Chemical Contamination

The problems and possible reasons for chemical contamination are described in published literature (20) (29).

Chemical contamination can arise because of environmental pollution, inappropriate use of agrochemicals, residues of fogging or fumigation substances, the use of non-authorized agrochemicals or the geological nature of the soil (natural load of heavy metals, see Chapter V, Part 1, 1. Cultivation, point 1.1).

- Environmental pollution may for example result in enhanced levels of heavy metals from a variety of sources, e.g. nearby industry, traffic on nearby roads.

The available literature (20) and in-house monitoring by processors clearly demonstrate that the incidence of high levels of heavy metal contamination is low. Hence heavy metals present only a very low food safety hazard. Another environmental pollution problem is the contamination of soil with pesticides from former treatments. If pesticides are persistent (e.g. DDT, HCH), residues may stay in the soil for more than 5 years and can be assimilated by the herbal plants.

- Chemical contamination could also arise from inappropriate personal behaviour which might contaminate food, for example smoking when handling harvested material and dried crops (packaged or unpackaged).
- Agrochemicals may be present as a consequence of carry-over from adjacent cultivated crops rather than their deliberate use, the use of non-approved chemicals or their use without adherence to Chapter V, Part 1, no. 1.8 of these guidelines.

In some raw materials from some origins residues exceeding MRLs may be detected; however in these instances the raw materials will not be purchased without prior analysis



to verify their legal conformance.

2.2 Foreign Matter

Foreign matter may be introduced during ‘wild gathering’ or harvesting of cultivated raw material, e.g. stones, wood, glass, metal, insect fragments, jewellery, parts of cigarettes, dirt, bird-feathers or foreign plant material which are picked up during the crop.

It is known that the majority of raw materials received by processors do contain a wide variety of foreign matter. The quantity present in the raw materials is generally relatively low and its nature presents as a rule minimal food safety hazards when considered in conjunction with the manner in which the final product is ultimately presented to, and used by, the consumer. The contamination with allergens within the meaning of Directive 2003/89/EC (32), e. g. during harvesting by picking up foreign plants (e. g. nuts), is unlikely but has to be considered. Only the presence of glass and metal might be a significant food safety hazard.

Infestation of raw materials with insects can occur and insects may be present at all stages of their life cycle. Any infestation is unacceptable and this aspect should be the subject of vigorous inspection and control procedures by the processor.

2.3 Microbiological contamination and contamination with mycotoxins (e.g. ochratoxin A)

Raw materials for herbal and fruit infusions contain a natural load of micro-organisms. It can be possible that this includes pathogenic germs, such as salmonella. On the one hand this natural occurrence of microbiological germs present no hazard, as an increase in microbiological load during storage can be excluded due to the low water activity when stored dry. On the other hand salmonella which might be present are eliminated by brewing with boiling water and infusing for an appropriate period. If the raw materials are not dried sufficiently or become wet during storage, transportation or processing, mould growth may occur. However, the presence of mould results in taints so that it is unacceptable and will be rejected for quality as well as health reasons. In a limited number of herbal and fruit infusions, certain species of moulds could result in the formation of mycotoxins as for example ochratoxin A. A contamination of liquorice root with the mycotoxin ochratoxin A is possible, for instance. The companies who are members of THIE take all necessary precautions to ensure that, in future, only such material is purchased and processed which has ochratoxin A levels lower than 20 ppb. Besides that, the processors will influence the suppliers of liquorice root in order to put them in a position to avoid the formation of ochratoxin A on the roots as far as possible. It is necessary to harvest liquorice root under dry conditions, if possible, to dry them enough and to keep them dry at all processing steps and at storage. Peeling the fresh roots is recommended, because unpeeled goods have a higher contamination risk.

The hazard of a subsequent microbiological contamination during processing is controlled by hygiene measures.

THIE has published microbiological specifications, one for raw materials used for herbal infusions (18) and another one for herbal infusions (dry) (19), which are reviewed and validated periodically. They are given in Chapter VII, Part 2, Annex 1 and 2 (see also Chapter VI, Part 2a, no. 2.3).

Part 2 Description of control measures and corrective actions

Part 2a Measures to be applied by the processor to prevent, eliminate or reduce potential food safety hazards in raw materials used for herbal and fruit infusions



1. Preface

This part of the guidelines outlines the measures that the processor should take on receipt of raw materials.

The frequency of checks will depend on the specific risks identified for the raw material for herbal and fruit infusions, its origin and the supplier (see also Chapter VI, Part 1), 'wild gathered' raw materials will generally merit greater attention than cultivated ones.

Food safety hazards are identified at the processing factory and it is there that the primary monitoring activity occurs and corrective actions determined. While there is growing evidence that hygiene standards are improving at the points where 'wild gathered' raw material for herbal and fruit infusions are collected and initially processed before sale, THIE recognises that its members cannot reliably devolve their responsibilities for food safety to the producers of the primary raw material. Buyers may frequently visit the producers but they can only inspect/audit a tiny fraction of the many hundreds of locations where 'wild gathered' raw material for herbal and fruit infusions are collected and sold. For this reason it is recommended that the processor's in-house HACCP programme encompasses suitable checks on the raw material for herbal and fruit infusions as received. This is necessary to ensure compliance with their legal obligations relating to food safety and to demonstrate 'due diligence', i.e. reliance is not placed on the primary producers' controls.

2. Description of measures

2.1 Chemical Contamination

Processors are recommended to check raw materials as received for possible chemical contamination. In particular on receipt of raw material originating from regions with possible safety hazards, it should regularly be analysed for pesticide residues and contaminants (control measures). In case of exceedances of the acceptable maximum levels the material e.g. has to be rejected unless there is a legally permitted corrective action. The critical limits for chemical contamination are inter alia given in EU and/or national legislation (30) (31) as well as in THIE Compendium of Guidelines for Herbal and Fruit Infusions, Extracts thereof and Preparations (17).

In the case of pesticides and heavy metals, results of the checks carried out by a number of THIE Members are collated and summaries prepared; similarly, members of the trade share information on other chemical hazards. The collation of data in this area facilitates wider coverage of raw materials on the world market than would be possible by one company on its own and ensures that issues are rapidly identified and addressed by the trade as a whole. The aim is to avoid the sourcing of raw material for herbal and fruit infusions from regions with possible food safety hazards (as described in Chapter VI, Part 1).



2.2 Foreign Matter

Although the presence of foreign matter in raw materials as received is likely and would, if not removed, provide only a low food safety hazard, control measures are implemented by the processors both on receipt of the raw material and as an integral part of their processing operations. All available methods of removing foreign matter (e.g. magnetic separation of ferrous metals, sieving processes, air separation etc.) should be considered and those most applicable to the material and foreign matter present employed. Allergenic raw materials should be identified on receipt and segregated, if possible; accidental contamination during cultivation, harvesting and further process steps has to be avoided. If appropriate, as a corrective action the material can be rejected, particularly when glass or metal is present.

2.3 Microbiological Contamination

Processors are recommended to carry out checks with regard to the microbiological contamination of the raw materials received.

Regulation 401/2006/EC (26) as well as Regulation 2073/2005/EC (27) give an example and orientation when setting up the sampling plan. Way and frequency, at which stage of the respective process stage samples have to be taken, are risk-oriented and company specific. To fix the sampling plan all well-known and relevant circumstances, like e.g. delivery, reliability, country/region of origin and possible microbiological contamination, have to be taken into consideration. The individual sampling plan developed accordingly and the criteria it is based on must be documented in a reasonable way.

The results of microbiological analyses carried out by a number of processors and packers are collated by THIE and summaries prepared. The collation of data in this area facilitates wider coverage of raw materials on the world market than would be possible by one company on its own and identifies which raw material for herbal and fruit infusions and/or countries of origin require careful monitoring.

Where a material does not comply with THIE's recommended microbiological specification for trade in herbal infusion raw materials (Chapter VII, Annex 1) (18), different measures can be applied:

- Rejection of the raw materials and information of the raw material supplier to provoke corrective actions on the primary production level
- Application of suitable, legally permitted decontamination processes, e.g. steam treatment.

The finished product manufactured by the European processor has to comply with THIE's microbiological specification for herbal infusions (dry) (Chapter VII, Annex 2) (19).

In liquorice root deliveries or blends containing liquorice root exceed a limit of 20 µg ochratoxin A, the goods will be rejected. The supplier should be asked to apply corrective actions in cultivating and harvesting liquorice root (see Chapter VI, Part 1, no. 2.3).

Processors are recommended to provide the guidelines to their suppliers to enable microbial loads to be kept to a minimum.



Part 2b Summary of the potential food safety hazards identified in raw material for herbal and fruit infusions and measures to be applied by the processor to prevent, eliminate or reduce them

PROCESS STEP	HAZARD	CONTROL MEASURES	MAXIMUM LIMITS TOLERANCES	FREQUENCY	RESPONSIBILITY	DOCUMENTATION	CORRECTIVE ACTIONS
Processes taking place in the country of origin (see Chapter V, Part 1 and 2)	<ul style="list-style-type: none"> Due to raw material and/or Due to suppliers practices 	THIE's GAHP in its current version; all requirements laid down in the GAHP must be met by the supplier	According to European / national food law and (if available) specifications for raw material	Periodical rating of supplier	<u>Supplier:</u> regular controls according to the requirements of THIE's GAHP <u>Importer/Processor in the EU:</u> regular rating of supplier	Documentation according to THIE's GAHP and reports of visits	<u>Supplier:</u> measures to correct the determined deviations <u>Importer/processor or in the EU:</u> checking the measures carried out by supplier; eventually new rating of supplier
Processes applied by importer/processor in the EU, processing final product	Goods <ul style="list-style-type: none"> <u>Chemical hazards:</u> e.g. pesticide residues <u>Physical hazards:</u> e.g. foreign matters <u>Microbiological hazards:</u> e.g. salmonellae 	HACCP-Plan <ul style="list-style-type: none"> Monitoring: company own and THIE database Manufacturing techniques Monitoring: company specific and THIE database, reconditioning, consumer information 	<ul style="list-style-type: none"> European / national food law, e.g. on pesticide residues THIE Compendium of Guidelines for Herbal and Fruit Infusions, Extracts thereof and Preparations THIE's Recommended Microbiological Specification for Herbal Infusions (dry) as part of THIE's GAHP 	<ul style="list-style-type: none"> According to sampling schedule Continuously According to sampling schedule 	Importer/Processor in the EU	<ul style="list-style-type: none"> Report of findings Processing documentation Report of findings 	<ul style="list-style-type: none"> Blocking and decision on further measures Adjustment of processing Blocking and decision on further measures



Part 3 Examples for default documents for the HACCP system: Rose-hip harvesting and processing in Chile

Introduction

Part 3a contains an overview of possible processing steps in rose-hip harvesting and processing in Chile. Part 3b gives an example for an HACCP plan for the drying of raw material. It must be adapted to the effectively applied, individual process in the drying establishment with a certain degree of organisation.

Herbal and fruit infusions are made of a multitude of raw materials. The rose-hip harvesting and processing/drying in Chile described hereafter has been picked up as a descriptive example. Also within the process sequence variations are possible, as the production steps themselves can differ. Accordingly, also the hazard analysis and resultant control measures and corrective actions are different. Due to the multitude of possible process sequences for all the different raw materials a comprehensive documentation for all raw materials and processes is neither appropriate nor possible. However, the chosen example describes one of the most important raw materials for herbal and fruit infusions and, in addition, it comprises typical process steps which also apply to other raw materials similarly.



Part 3 a Rose-hip harvesting and processing in Chile (example for implementation of GAHP)

GROWING

Rose-hips grow wild in the fields and hedgerows.

HARVESTING

Ripe rose-hips manually harvested by local population.

TRANSPORT TO COLLECTION POINT

Rose-hips taken to the collection point.

CONSOLIDATION

Daily harvest from the individual 'harvesters' consolidated.

SALE TO PROCESSOR

Rose-hips sold in bulk to the processor.

CLEANING

Rose-hips mechanically pre-cleaned to remove branches, leaves etc.

DRYING

Dried in the sun or in hot air drying chambers.

PACKING

Processed material packed and shipped.



Part 3 b Documentation HACCP plan

Drying raw material for herbal and fruit infusions in organised establishments (e.g. Drying Rose-hip in Chile)

Example: Drying rosehip in Chile (sub-process of Part 3a)

CCP is a critical control point as defined by Codex Alimentarius (12)

The decision tree provided in the compendium of the Codex Alimentarius is a decision guide for identification of CCP.

RAW MATERIAL PRODUCTION STEP	POSSIBLE HAZARD	CCP	CONTROL MEASURE	CRITICAL LIMITS	MONITORING PROCEDURE	CORRECTIVE ACTION
Delivery	<ul style="list-style-type: none"> soiled packs cross contamination from other raw materials infestation 	No	Visual inspection of incoming deliveries and removal of packs which do not meet requirements	Material and packs meet requirements	Visual inspection	Rejection, sorting, instructions to supplier
Mechanical pre-cleaning	Soil, stones, twigs, leaves, other foreign bodies	No	Removal by hand and/or by sieves	No obvious contamination	Visual inspection before and after removal	
Drying in hot air chambers, in the sun etc.	Inadequate drying, composting, formation of mould	No	E.g. spread in thin layers, boxes with ventilation slits, wire mesh grids, ensure proper air circulation, optimise drying conditions	<ul style="list-style-type: none"> e.g. maximum layer thickness e.g. turning frequency (e.g. twice daily) temperature control sufficient ventilation humidity 	<ul style="list-style-type: none"> check layer thickness, drying time and if necessary temperature sensory perception visual inspection humidity gauge 	<ul style="list-style-type: none"> re-dry sorting out
	Contamination by gas emissions	No	For direct drying use only propane or butane	No emission onto the material	Sensory perception	Maintenance of drying chambers and equipment
	Cross contamination with other crops and/or their ingredients dried before	No	Cleaning of the dryer before drying of raw materials for herbal infusions ; or separate dryer for raw materials for herbal and fruit infusions	No cross contamination	Visual inspection	Sorting out Maintenance of drying chambers and equipment Repeat cleaning of the dryer
	Contamination with refuse, e.g. sieved soil, eliminated plant material	No	Clearly labelled refuse bins, to be emptied and cleaned daily	No contamination	Cleaning rota	Sorting out
	Metal fragments (e.g. broken pieces of shovels or metal grids)	No	Inspect equipment regularly, observe maintenance procedures	No metal fragments in the material	<ul style="list-style-type: none"> magnets can be used when filling material into sacks e.g. metal detectors at a later production stage 	<ul style="list-style-type: none"> repair and replace damaged equipment install magnets

Table continues on the following page.



RAW MATERIAL PRODUCTION STEP	POSSIBLE HAZARD	CCP	CONTROL MEASURE	CRITICAL LIMITS	MONITORING PROCEDURE	CORRECTIVE ACTION
Dried crop	Soil, stones, other foreign material	No	<ul style="list-style-type: none"> e.g. sieving (keep sieves clean, observe maintenance measures), winning 	As per specification	<ul style="list-style-type: none"> optical check by sieving 	<ul style="list-style-type: none"> repeated sieving sieve and winnow at a later stage of production (e.g. in the European processing establishment)
	Infestation (insects, rodents, insect damage, contamination (by farm animals and domestic animals, birds))	No	<ul style="list-style-type: none"> pack as soon as possible keep material protected by using wire mesh to cover shutters and doorways; constructional modifications 	No infestation	Suitable control measures (traps, electric insect eradicators, monitoring for pests)	<ul style="list-style-type: none"> sorting out fumigate if necessary
	Cross contamination by smoking	No	<ul style="list-style-type: none"> implement non-smoking area training of staff 	No contamination	Inspection of non-smoking area	<ul style="list-style-type: none"> adapt non-smoking area training of staff

Records to be kept as appropriate for the size of the establishment in question (e.g. results of humidity measurements, maintenance books).

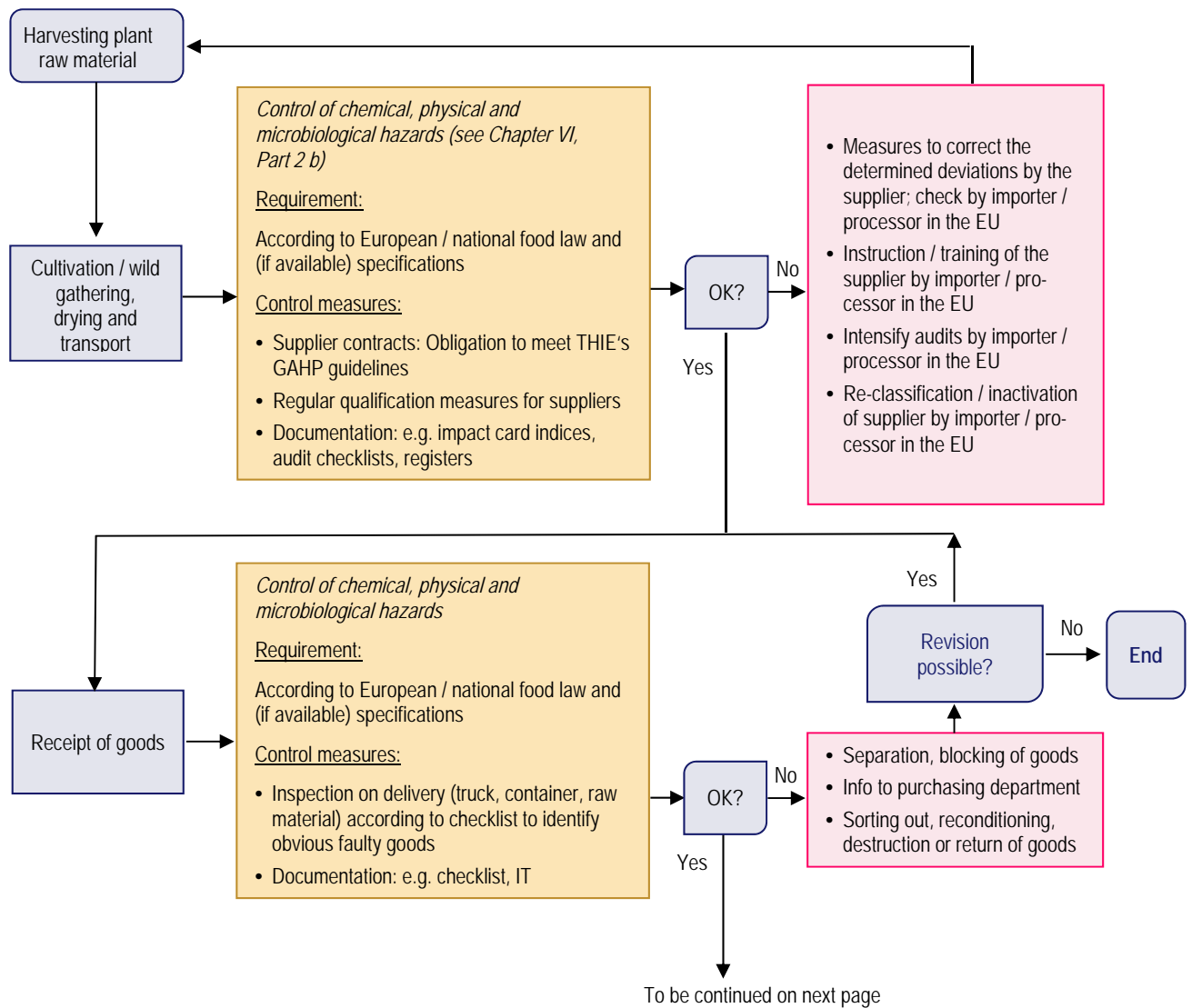
Note:

The drying process may differ in the respective establishments with a certain degree of organisation in Chile. Accordingly, the established HACCP plan has to be specific and characteristic for the possible hazards and measures in the individual plant. The company specific HACCP plan of THIE members, which buy dried rose-hips, consider the hazards, control measures and corrective actions which exist/are applied in the country of origin and determine accordingly the Critical Control Points (CCP).



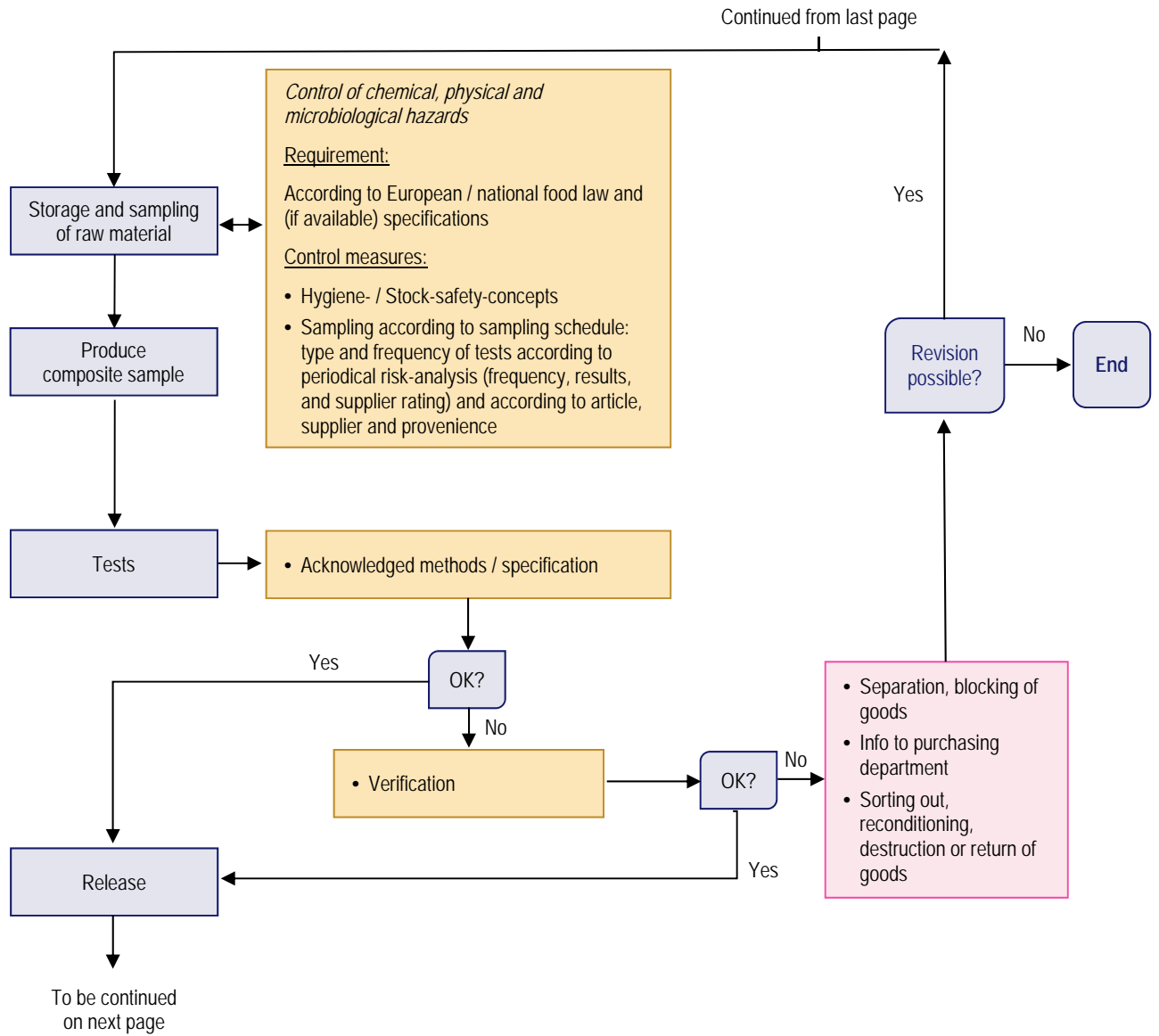
Part 4 Process Diagram for Control Measures and Corrective Actions concerning Food Safety Hazards during Processing

Process step **Requirements / Control measures** **Corrective actions**





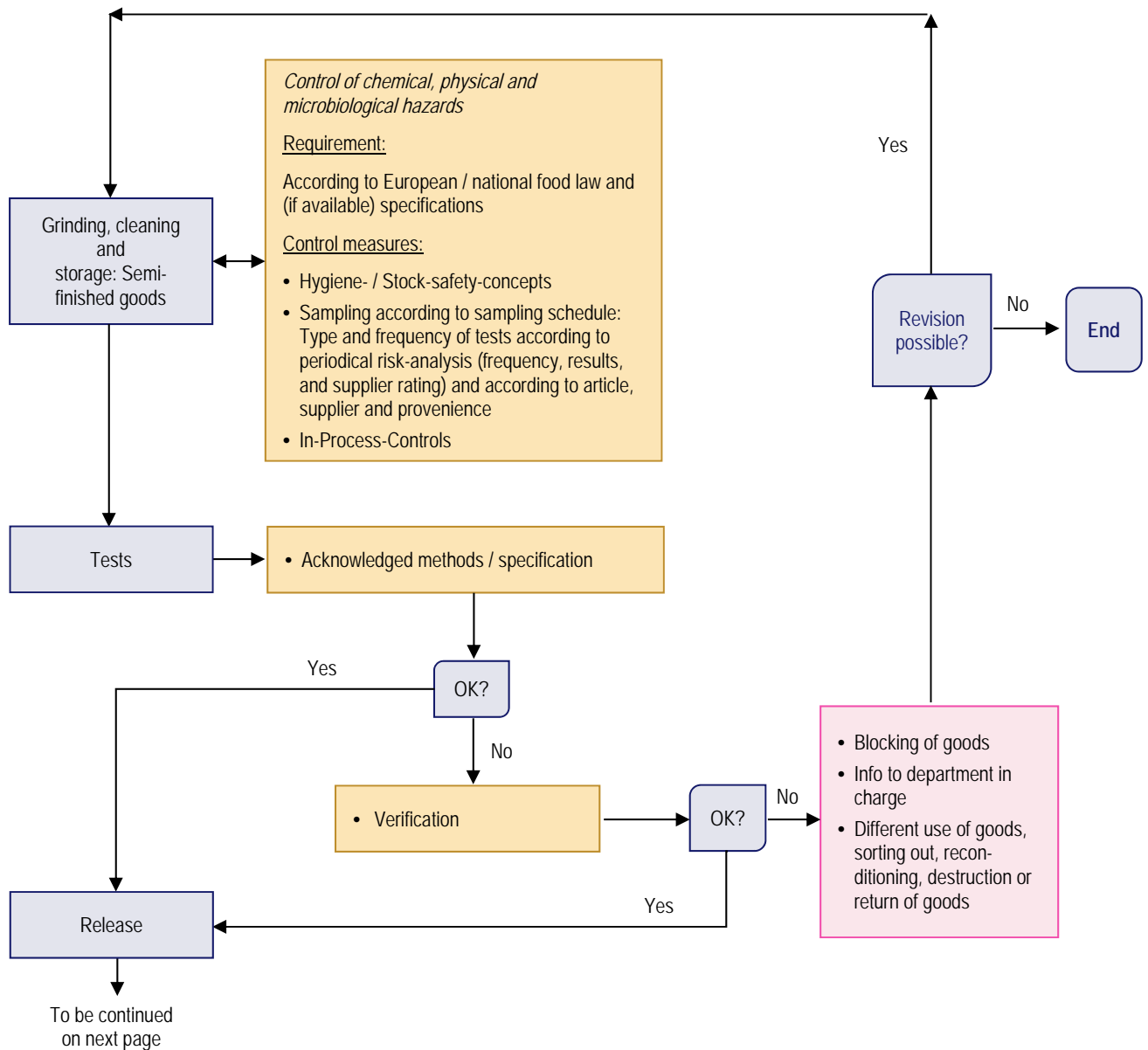
Process step **Requirements / Control measures** **Corrective actions**





Process step	Requirements / Control measures	Corrective actions
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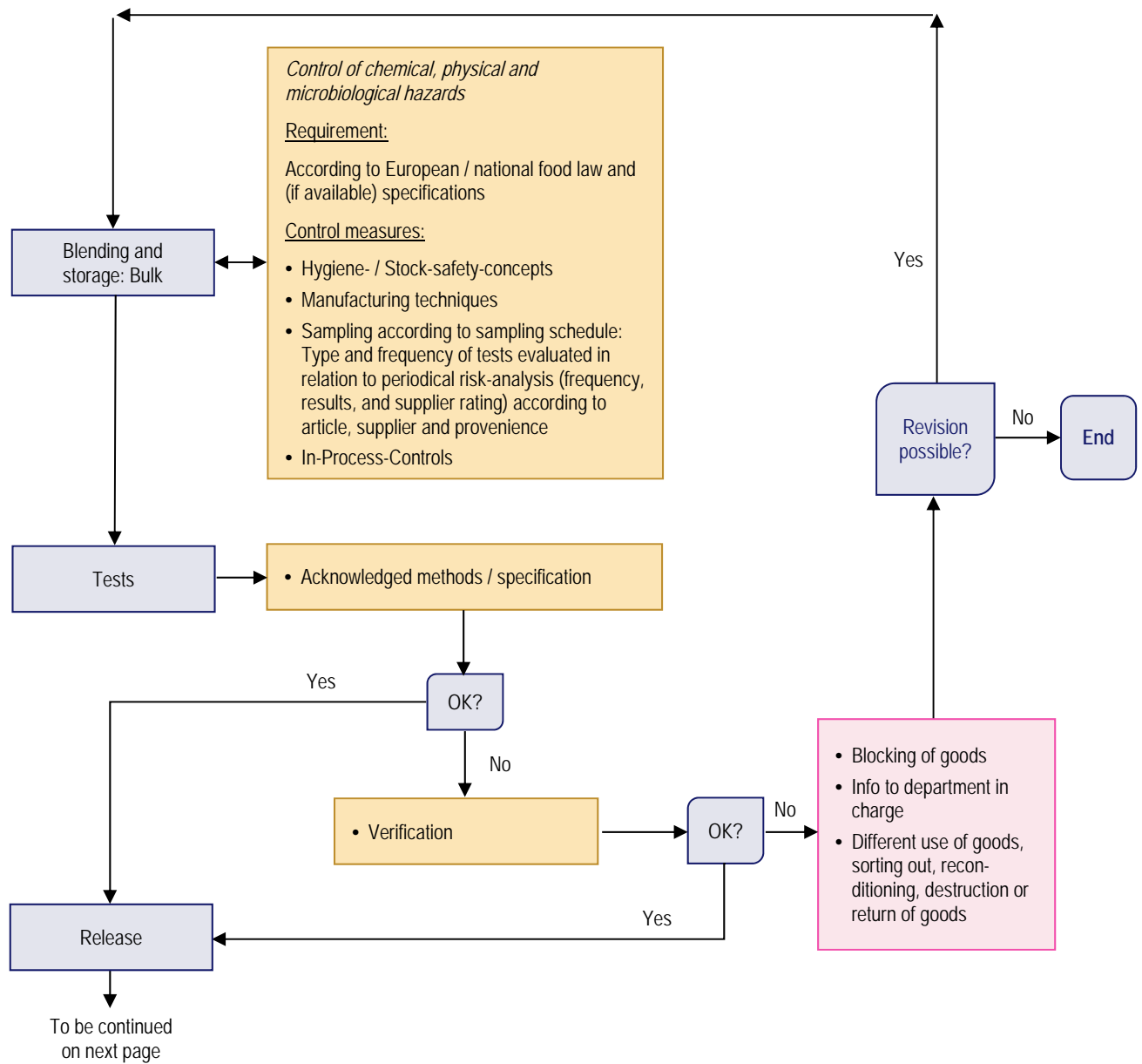
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Process step **Requirements / Control measures** **Corrective actions**

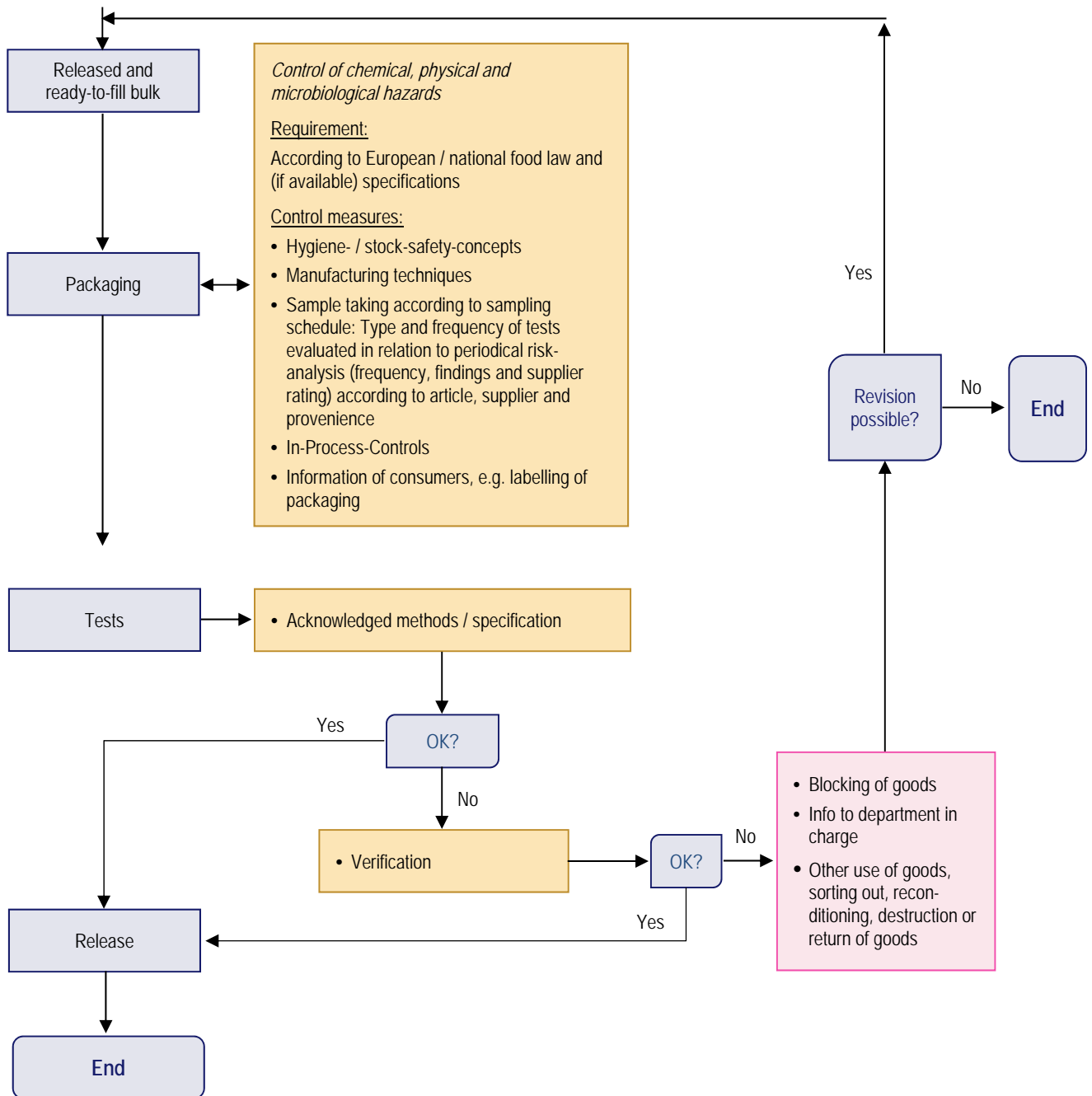
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Process step **Requirements / Control measures** **Corrective actions**

Continued from last page





VII. ANNEXES

Annex 1

Issue 9, June 2015

THIE'S RECOMMENDED MICROBIOLOGICAL SPECIFICATION FOR TRADE IN HERBAL INFUSIONS RAW MATERIALS (DRY)

MICROBIOLOGICAL LIMITS

<i>Aerobic Plate Count</i>	$\leq 10^8 / \text{g}$
<i>Yeasts (Mint excluded)</i> ¹⁾	$\leq 10^6 / \text{g}$
<i>Moulds</i>	$\leq 10^6 / \text{g}$
<i>E. coli</i>	$\leq 10^4 / \text{g}$
<i>Salmonella</i>	absent in 125 g

GUIDANCE VALUE ²⁾

<i>Enterobacteriaceae</i>	$\leq 10^6 / \text{g}$
---------------------------	------------------------

SAMPLING

- 5 random samples of 50 g are to be collected from the shipment.
- The 5 samples will be mixed to a composite sample.
- The composite sample is the basis for all laboratory investigations, including salmonella.

METHODS *

Aerobic Plate Count

Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 1: Colony count at 30 degrees C by the pour plate technique (ISO 4833-1:2013); Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 2: Colony count at 30 degrees C by the surface plating technique (ISO 4833-2:2013 and ISO 4833-2:2013/Cor 1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Yeasts and Moulds

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts and moulds – Part 2: Colony count technique in products with water activity less than or equal to 0.95 (ISO 21527-2:2008)

E. coli

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli – Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-1:2001) or Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-



glucuronidase-positive *Escherichia coli* – Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-2:2001); European Reference Method according to Regulation (EC) No 1441/2007

Salmonella

Microbiology of the food chain -- Horizontal method for the detection, enumeration and serotyping of *Salmonella* -- Part 1: Horizontal method for the detection of *Salmonella* spp. (ISO/DIS 6579-1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Enterobacteriaceae

Microbiology of food and animal feeding stuffs – Horizontal methods for the detection and enumeration of Enterobacteriaceae – Part 2: Colony – count method (ISO 21528-2:2004); European Reference Method according to Regulation (EC) No 1441/2007

- 1) *For mint no yeast specification is applicable due to the high natural yeast load.*
- 2) *THIE recommends monitoring Enterobacteriaceae as an additional hygienic parameter.*
- * Other methods can be used if they are checked against a reference method (official method and suitability tested [recovery of reference microorganisms]).



Annex 2

Issue, 6, June 2015

THIE'S RECOMMENDED MICROBIOLOGICAL SPECIFICATION FOR HERBAL INFUSIONS (DRY)

MICROBIOLOGICAL LIMITS

<i>Aerobic Plate Count</i>	$\leq 10^7 / \text{g}$
<i>Yeasts</i>	$\leq 10^5 / \text{g}$
<i>Moulds</i>	$\leq 10^5 / \text{g}$
<i>E. coli</i>	$\leq 10^3 / \text{g}$
<i>Salmonella</i>	absent in 125 g

GUIDANCE VALUE ¹⁾

<i>Enterobacteriaceae</i>	$\leq 10^5 / \text{g}$
---------------------------	------------------------

SAMPLING

- 5 random samples of 50 g are to be collected from the shipment.
- The 5 samples will be mixed to a composite sample.
- The composite sample is the basis for all laboratory investigations, including salmonella.

METHODS *

Aerobic Plate Count

Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 1: Colony count at 30 degrees C by the pour plate technique (ISO 4833-1:2013); Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 2: Colony count at 30 degrees C by the surface plating technique (ISO 4833-2:2013 and ISO 4833-2:2013/Cor 1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Yeasts and Moulds

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts and moulds – Part 2: Colony count technique in products with water activity less than or equal to 0.95 (ISO 21527-2:2008)

E. coli

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli – Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-1:2001) or Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli – Part 2: Colony-count technique at 44 degrees C using



5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-2:2001); European Reference Method according to Regulation (EC) No 1441/2007

Salmonella

Microbiology of the food chain -- Horizontal method for the detection, enumeration and serotyping of Salmonella -- Part 1: Horizontal method for the detection of Salmonella spp. (ISO/DIS 6579-1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Enterobacteriaceae

Microbiology of food and animal feeding stuffs – Horizontal methods for the detection and enumeration of Enterobacteriaceae – Part 2: Colony – count method (ISO 21528-2:2004); European Reference Method according to Regulation (EC) No 1441/2007

ADDITIONAL REMARK

Herbal infusions are parts of plants which are intended for infusing with freshly boiling water and brewing for at least 5 minutes/5-x minutes.

¹⁾ THIE recommends monitoring *Enterobacteriaceae* as an additional hygienic parameter.

* Other methods can be used if they are checked against a reference method (official method and suitability tested [recovery of reference microorganisms]).



Annex 3

REFERENCES AND LITERATURE

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2. Regulation (EC) No 1019/2008 of 17 October 2008 amending Annex II to Regulation (EC) No 852/2004 of the European Parliament and of the Council on the hygiene of foodstuffs, OJ L 277, 18.10.2008, p. 7–7
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Proposed Draft Code of Hygienic Practice For Spices and Condiments
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18. THIE Compendium of Guidelines for Herbal and Fruit Infusions, Extracts thereof and Preparations, Tea & Herbal Infusions Europe, Hamburg, current version available at www.thie-online.eu
19. THIE's Recommended Microbiological Specification For Trade in Herbal Infusion Raw Materials, Issue 9, June 2015
20. THIE's Recommended Microbiological Specification For Herbal Infusions (Dry), Issue 6, June 2015
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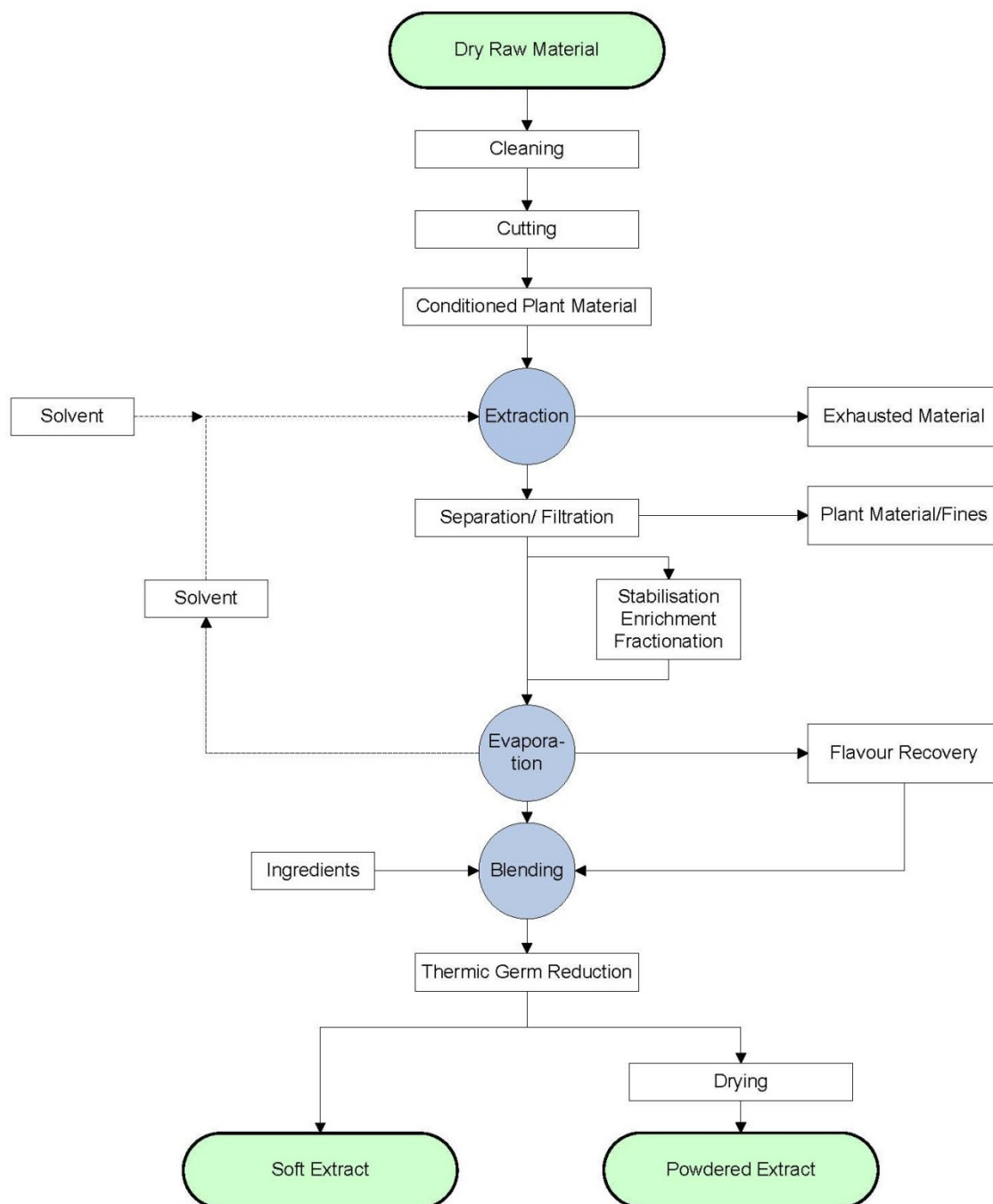
Revision History

Date	Issue No.	Amendment/s	Reason
28.06.1993	0	EHIA Code of Good Agricultural Practice for Herbal Infusion Raw Materials (GAP)	
14.06.2002	1	Guidelines For Good Agricultural And Hygiene Practices For Raw Materials Used For Herbal Infusions (GAHP)	Implementation of the provisions of the DRAFT Regulation 852/2004 on the hygiene of foodstuff; and of HACCP
2./3.06.2005	2	Section A: Basic requirements applicable to all operators (growers, traders, processors) in the country of origin Section B: Additional requirements applicable to organised establishments that can support implementation and operation of HACCP HACCP Plan	Adopted Regulation (EC) No. 852/2004, HACCP for organised establishments
16.01.2008	3	Clarification of document structure, rephrasing microbiological contamination: OTA formation	New perceptions
13.06.2008	4	Inclusion of 'EHIA's recommended microbiological specification for herbal infusions (dry)'	New specification
18.01.2012	5	Additional requirements concerning allergens, personal hygiene, cross contamination	Periodical update
26.06.2014	6	Replace EHIA's Recommended Microbiological Specifications	Revision of the microbiological specifications
20.07.2015		Transformation to THIE document	Dissolution of EHIA and foundation of THIE



Annex 12

THE manufacture flowchart of soft and powdered extracts of herbal and fruit infusions





Annex 13

THIE standard procedure for preparation of HFI-extract liquors for sensory evaluation

Introduction

Extracts of herbal and fruit infusions (HFI) are foodstuffs which are traditionally used for the preparation of foodstuffs, e.g. instant products, ready mixes, as ingredients, because of their health- and sensory properties. Besides the physical and chemical quality parameters the sensory characteristics are of special importance for the overall product quality. To characterize the sensory quality of HFI-Extracts, 3 basic types of sensory examinations have to be assessed:

- **Colour of liquor**
- **Aroma (smell) of liquor**
- **Flavour (taste) (and possible “Off-Flavour”) of liquor**

For proper evaluation of the sensory quality, EHIA recommends its Standard Procedure for Preparations of HFI-Extract Liquors for Sensory Evaluation of Extracts. For comparable results, it is important to define basic test parameters:

1. Water Quality

Flavour, colour and appearance (e.g. clearness, turbidity) of the liquor are affected by the hardness (mineral composition) of the water used for infusion. Therefore water used for the sensory test should be demineralised, non-chlorinated water.

2. Water Temperature

For proper evaluation of the sensory properties of HFI-Extracts, it has to be distinguished between:

- a) hot water soluble HFI-Extracts
- b) cold water soluble HFI-Extracts.

For hot water soluble HFI-Extracts boiling water has to be used.

Tasting should be performed 5-10 minutes after preparation of the liquor, when the dilution has got a temperature of about 70°C.

For cold water soluble HFI-Extracts, water temperature should be 15-25°C.

For both temperatures, it has to be guaranteed, that HFI-Extracts have been completely dissolved.

3. Weight of HFI-Extracts, Volume of water, Preparation Time

It is recommended to use following parameters:

- HFI-Extract (dry), HFI-Extract (liquid): min. 1.2 g/l l as defined in the guideline document under 3.3.



Procedure

- Weigh into a cup / glass beaker the amount of material given above.
- Fill the cup / glass beaker with the corresponding amount of cold or boiling water, depending on quality of HFI-Extract.
- Ensure that HFI-Extract is properly dissolved, e.g. stir with a tea spoon / glass stirrer.
- Cold soluble HFI-Extract can be evaluated immediately after dissolution of the extract.
- Hot water soluble HFI-Extracts should be evaluated after 5-10 min.
- Colour is evaluated optically against an agreed standard. The standard is prepared in the same way and at the same time.
- Aroma and Flavour are evaluated by tasting against an agreed standard. The standard is prepared in the same way and at the same time.
- Test results are assigned to the lot and documented.



Annex 14

THIE'S recommended microbiological specification for extracts of herbal infusions

MICROBIOLOGICAL LIMITS

<i>Aerobic Plate Count</i>	$\leq 10^3$ / g
<i>Yeasts</i>	$\leq 10^2$ / g
<i>Moulds</i>	$\leq 10^2$ / g
<i>Enterobacteriaceae</i>	$\leq 10^2$ / g
<i>E. coli</i>	absent / g
<i>Salmonella</i>	absent in 25 g

SAMPLING

- Per batch, resp. homogeneous unit at least 1 sample has to be taken.
- Sample size at least 100 g
- The sample is the basis for all laboratory investigations

METHODS*

Aerobic Plate Count

Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 1: Colony count at 30 degrees C by the pour plate technique (ISO 4833-1:2013); Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 2: Colony count at 30 degrees C by the surface plating technique (ISO 4833-2:2013 and ISO 4833-2:2013/Cor 1:2014); European Reference Method according to Regulation (EC) No 1441/2007

Yeasts and Moulds

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts and moulds – Part 1: Colony count technique in products with water activity greater than 0.95 (ISO 21527-1:2008); Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts and moulds – Part 2: Colony count technique in products with water activity less than or equal to 0.95 (ISO 21527-2:2008)

E. coli

Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli – Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-1:2001) or Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-



glucuronidase-positive *Escherichia coli* – Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide (ISO 16649-2:2001); European Reference Method according to Regulation (EC) No 1441/2007

Enterobacteriaceae

Microbiology of food and animal feeding stuffs – Horizontal methods for the detection and enumeration of Enterobacteriaceae – Part 2: Colony – count method (ISO 21528-2:2004); European Reference Method according to Regulation (EC) No 1441/2007

Salmonella

Microbiology of the food chain -- Horizontal method for the detection, enumeration and serotyping of *Salmonella* -- Part 1: Horizontal method for the detection of *Salmonella* spp. (ISO/DIS 6579-1:2014); European Reference Method according to Regulation (EC) No 1441/2007

GENERAL

Microbiology of food and animal feeding stuffs – Preparation of test samples, initial suspension and decimal dilutions for microbiological examination – Part 1: General rules for the preparation of the initial suspension and decimal dilutions (ISO 6887-1:1999)

Microbiology of food and animal feeding stuffs – Preparation of test samples, initial suspension and decimal dilutions for microbiological examination – Part 4: Specific rules for the preparation of products other than milk and milk products, meat and meat products, and fish and fishery products (ISO 6887-4:2003)

ADDITIONAL REMARK

All THIE Recommended Microbiological Specifications are reviewed annually.

* Other methods can be used if they are checked against a reference method (official method and suitability tested [recovery of reference microorganisms]).

TEA & HERBAL INFUSIONS EUROPE

Formerly: European Tea Committee (ETC) and European Herbal Infusions Association (EHIA)



Revision history

Date	Issue No.	Amendment/s	Reason
25.06.2010	1	EHIA Compendium of Guidelines for Herbal and Fruit Infusions and Products thereof (apart from introduction, part on extracts and several annexes)	Establishment of comprehensive guidelines
30.06.2011	2	Main document: - Introduction, - part on extracts Annexes - amendment of Annex 3, 4, 6, 7, - new Annexes 12 – 14	Completion of the Compendium of Guidelines
18.01.2012	3	GAHP Revision History added	Update of GAHP (Issue 5)
28.06.2012	4	Part I and Part II: - renumeration of the categories - 1.3 General characteristics of the product Annexes - Annex 1 - Annex 3	Update for more clarity Title revised Alignment with Inventory list
26.06.2014	5	Content added Provision for foreign matters amended	Update for more clarity Pyrrolizidine alkaloids (PA) issue
22.07.2015		Transformation to THIE document	Dissolution of EHIA and foundation of THIE