

## SCIENTIFIC OPINION

### **Scientific opinion on the substantiation of health claims related to *Justicia adhatoda* L. and protection of DNA, proteins and lipids from oxidative damage (ID 2508) and function of the upper respiratory tract (ID 3970) pursuant to Article 13(1) of Regulation (EC) No 1924/2006<sup>1</sup>**

**EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA)<sup>2</sup>**

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#### SUMMARY

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies was asked to provide a scientific opinion on a list of health claims pursuant to Article 13 of Regulation 1924/2006. This opinion addresses the scientific substantiation of health claims in relation to *Justicia adhatoda* L. and protection of DNA, proteins and lipids from oxidative damage and function of the upper respiratory tract. The scientific substantiation is based on the information provided by the Member States in the consolidated list of Article 13 health claims and references that EFSA has received from Member States or directly from stakeholders.

The food constituent that is the subject of the health claims is *Justicia adhatoda* L..

#### **Protection of DNA, proteins and lipids from oxidative damage**

The Panel considers that the food constituent *Justicia adhatoda* L. has not been sufficiently characterised for protection of DNA, proteins and lipids from oxidative damage.

The claimed effect “*Adhatoda vasica* has antiinflammatory activity” is not sufficiently defined but from the proposed wordings the Panel assumes that the claimed effect relates to the protection of DNA, proteins and lipids from oxidative damage. The Panel considers that protection of DNA, proteins and lipids from oxidative damage is beneficial to human health.

As the information provided in the list is insufficient to characterise *Justicia adhatoda* L. and the evidence provided in the animal and *in vitro* studies does not predict an effect of the consumption of *Justicia adhatoda* L. on protection of DNA, proteins and lipids from oxidative damage in humans, the Panel concludes that a cause and effect relationship has not been established between the consumption of *Justicia adhatoda* L. and protection of DNA, proteins and lipids from oxidative damage.

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**Function of the upper respiratory tract**

The Panel considers that the food constituent, *Justicia adhatoda* L. has been sufficiently characterised for the function of the upper respiratory tract with the following conditions of use: Powder (leaf and/or whole plant): 0.05-0.5 g/day; and aqueous extract (leaf and/or whole plant): 0.02-0.25 g/day.

The claimed effect “respiratory” is not sufficiently defined but from the proposed wording the Panel assumes that the claimed effect relates to normal function of the upper respiratory tract. The Panel considers that normal function of the upper respiratory tract is beneficial to human health.

The Panel notes that the reference cited did not provide any scientific data that could be used to substantiate the claimed effect. The Panel concludes that a cause and effect relationship has not been established between the consumption of *Justicia adhatoda* L. and normal function of the upper respiratory tract.

**KEY WORDS**

*Justicia adhatoda* L., oxidative damage, respiratory, health claims.

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**EFSA DISCLAIMER**

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The members of the Claims/Sub-Working Group Characterisation of Botanicals: Robert Anton, Luc Delmulle, Kirsten Pilegaard, Mauro Serafini and Hans Verhagen.

**INFORMATION AS PROVIDED IN THE CONSOLIDATED LIST**

The consolidated list of health claims pursuant to Article 13 of Regulation 1924/2006<sup>3</sup> submitted by Member States contains main entry claims with corresponding conditions of use and literature from similar health claims. The information provided in the consolidated list for the health claims subject to this opinion is given in Table 1.

Table 1. Main entry health claims related to *Justicia adhatoda* L., including conditions of use from similar claims, as proposed in the Consolidated List.

ID	Food or Food constituent	Health Relationship	Proposed wording
2508	<i>Adhatoda vasica</i>	<i>Adhatoda vasica</i> has antiinflammatory activity	<p><i>Adhatoda vasica</i> contributes to the body total antioxidant capacity.</p> <p><i>Adhatoda</i> possesses antioxidant activity.</p> <p>Is a strong antioxidant.</p> <p>Helps protects from oxidative damage.</p> <p>Helps strenghten the body antioxidant defenses.</p> <p>Is a useful antioxidant.</p> <p>Has a protective effect due to its antioxidant properties.</p>
			<p><b>Conditions of use</b></p> <ul style="list-style-type: none"> <li>- Quantity in Average daily serving: 100 miligram(s) <i>Adhatoda vasica</i>.</li> <li>- Daily amount: 100 miligrams in 2 servings. for up to 12 weeks.</li> <li>- Target group: adults aged 18 years and over with some exceptions.</li> <li>- This product should be avoided by pregnant and lactating women, and children. These groups of people should avoid taking <i>adhatoda vasica</i> just as they should avoid taking any unnecessary supplements due to being vulnerable populations.</li> </ul>
3970	<b>Food or Food constituent</b>	<b>Health Relationship</b>	<b>Proposed wording</b>
	<i>Adhatoda vasica</i> LEAF & WHOLE PLANT	Respiratory	Helps to maintain the health of the respiratory system by its sedative and expectorant properties.
<p><b>Conditions of use</b></p> <ul style="list-style-type: none"> <li>- Powder: 0.5-0.05g/day; aqueous extract 0.25-0.02g/day. All over 2 years old: 2-4 years ¼ adult dose, 4-10 years half adult dose.</li> </ul>			

<sup>3</sup> Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods. OJ L 404, 30.12.2006, p. 9–25.

## ASSESSMENT

### 1. Characterisation of the food/constituent

The food constituent that is the subject of the health claim is *Justicia adhatoda* L.. The characterisation of *Justicia adhatoda* L. is performed by comparing data provided as conditions of use to information extracted from standard reference textbooks (see Table 2 below and Appendix C for list of standard reference textbooks used for the characterisation).

Table 2. Information on *Justicia adhatoda* L. from standard reference textbooks and the information provided as conditions of use.

ID	Scientific name	Part used	Nature of the preparation	Conditions of use
<b>Text-book</b>	<i>Justicia adhatoda</i> L. = <i>Adhatoda vasica</i> Nees. = <i>Adhatoda zeylanica</i> Medik.  Acanthaceae	Aerial part; root;	Fresh juice; powder; extracts; decoction; syrup	Dried leaf: 1-2g/day, and equivalent preparations.  Dried root: 0.5- 1.5g/day, and equivalent preparations.
<b>2508</b>	<i>Adhatoda vasica</i>	Not specified.	Not specified	Quantity in average daily serving: 100mg/day. Two beverages are to be consumed daily.  <i>Note: Not sufficiently specified</i>
<b>3970</b>	<i>Adhatoda vasica</i>  Leaf and whole plant	Leaf; whole plant	Powder; aqueous extract	Powder: 0.05- 0.5g/day;  Aqueous extract: 0.02- 0.25g/day.

ID 2508:

The part used and the nature of preparation are not specified and the conditions of use are not sufficiently specified. The Panel notes that the consolidated list contains insufficient information to allow a characterisation of *Justicia adhatoda* L..

The Panel considers that the food constituent, *Justicia adhatoda* L., which is the subject of the health claim, has not been sufficiently characterised.

ID 3970:

The Panel considers that the food constituent, *Justicia adhatoda* L., which is the subject of the health claim, has been sufficiently characterised with the following conditions of use: Powder (leaf and/or whole plant): 0.05-0.5 g/day, and aqueous extract (leaf and/or whole plant): 0.02-0.25 g/day.

## 2. Relevance of the claimed effect to human health

### 2.1. Protection of DNA, proteins and lipids from oxidative damage (ID 2508)

The claimed effect is “*Adhatoda vasica* has antiinflammatory activity”. The Panel assumes that the target population is the general population.

The claimed effect “*Adhatoda vasica* has antiinflammatory activity” is not sufficiently defined. From the proposed wording the Panel assumes that the claimed effect relates to the protection of DNA, proteins and lipids from oxidative damage.

Reactive oxygen species including several kinds of radicals are generated in biochemical processes (e.g. respiratory chain) and as a consequence of exposure to exogenous noxes (e.g. radiation, pollutants). These reactive intermediates damage biologically relevant molecules such as DNA, proteins and lipids if they are not intercepted by the antioxidant network which includes free radical scavengers like antioxidant nutrients.

The Panel considers that protection of DNA, proteins and lipids from oxidative damage is beneficial to human health.

### 2.2. Function of the upper respiratory tract (ID 3970)

The claimed effect is “respiratory”. The Panel assumes that the target population is the general population.

The claimed effect “respiratory” is not sufficiently defined. From the proposed wording the Panel assumes that the claimed effect refers to the normal function of upper respiratory tract.

The Panel considers that normal function upper respiratory tract is beneficial to human health.

## 3. Scientific substantiation of the claimed effect

### 3.1. Protection of DNA, proteins and lipids from oxidative damage (ID 2508)

Five references were cited to substantiate the claimed effect. Three were animal studies investigating the effect of *Justicia adhatoda* L. against radiation-induced haematological alterations, its antitussive properties or its hepatoprotective effects. The Panel notes that these references do not provide any scientific data that could be used to substantiate the claimed effect.

One reference was an *in vitro* study on the anti-inflammatory activity of *Justicia adhatoda* L. One animal study investigated the effect of *Justicia adhatoda* L. on cadmium chloride-induced renal oxidative stress, where *Justicia adhatoda* L. showed a significant recovery in antioxidative status (Jahangir et al., 2006).

The Panel considers that the evidence provided in the animal and *in vitro* studies does not predict an effect of *Justicia adhatoda* L. consumption on protection of DNA, proteins and lipids from oxidative damage in humans.

The Panel concludes that a cause and effect relationship has not been established between the consumption of *Justicia adhatoda* L. and protection of DNA, proteins and lipids from oxidative damage.

### 3.2. Function of the upper respiratory tract (ID 3970)

One reference was cited to substantiate the claimed effect. This reference is a monograph, in which the claimed effect is stated. The Panel notes that the reference cited did not provide any scientific data that could be used to substantiate the claimed effect.

The Panel concludes that a cause and effect relationship has not been established between the consumption of *Justicia adhatoda* L. and normal function of the upper respiratory tract.

#### CONCLUSIONS

On the basis of the data presented, the Panel concludes that:

#### Protection of DNA, proteins and lipids from oxidative damage (ID 2508)

- The food constituent, *Justicia adhatoda* L., which is the subject of the health claim, has not been sufficiently characterised for protection of DNA, proteins and lipids from oxidative damage.
- The claimed effect is “*Adhatoda vasica* has antiinflammatory activity”. The target population is assumed to be the general population. Protection of DNA, proteins and lipids from oxidative damage is beneficial to human health.
- A cause and effect relationship has not been established between the consumption of *Justicia adhatoda* L. and protection of DNA, proteins and lipids from oxidative damage.

#### Function of the upper respiratory tract (ID 3970)

- The food constituent, *Justicia adhatoda* L., which is the subject of the health claim, has been sufficiently characterised for function of the upper respiratory tract with the following conditions of use: Powder (leaf and/or whole plant): 0.05-0.5g/day, and aqueous extract (leaf and/or whole plant): 0.02-0.25 g/day.
- The claimed effect is “respiratory”. The target population is assumed to be the general population. Normal function of the upper respiratory tract is beneficial to human health.
- A cause and effect relationship has not been established between the consumption of *Justicia adhatoda* L. and normal function of the upper respiratory tract.

#### DOCUMENTATION PROVIDED TO EFSA

Health claims pursuant to Article 13 of Regulation (EC) No 1924/2006 (No: EFSA-Q-2008-3241, EFSA-Q-2008-4685). The scientific substantiation is based on the information provided by the Member States in the consolidated list of Article 13 health claims and references that EFSA has received from Member States or directly from stakeholders.

The full list of supporting references as provided to EFSA is available on: <http://www.efsa.europa.eu/panels/nda/claims/article13.htm>.

#### REFERENCES

Jahangir T, Khan TH, Prasad L, Sultana S, 2006. Reversal of cadmium chloride-induced oxidative stress and genotoxicity by *Adhatoda vasica* extract in Swiss albino mice. *Biol Trace Elem Res*, 111, 217-228.



## APPENDICES

### APPENDIX A

#### BACKGROUND AND TERMS OF REFERENCE AS PROVIDED BY THE EUROPEAN COMMISSION

The Regulation 1924/2006 on nutrition and health claims made on foods<sup>4</sup> (hereinafter "the Regulation") entered into force on 19<sup>th</sup> January 2007.

Article 13 of the Regulation foresees that the Commission shall adopt a Community list of permitted health claims other than those referring to the reduction of disease risk and to children's development and health. This Community list shall be adopted through the Regulatory Committee procedure and following consultation of the European Food Safety Authority (EFSA).

Health claims are defined as "any claim that states, suggests or implies that a relationship exists between a food category, a food or one of its constituents and health".

In accordance with Article 13 (1) health claims other than those referring to the reduction of disease risk and to children's development and health are health claims describing or referring to:

- a) the role of a nutrient or other substance in growth, development and the functions of the body; or
- b) psychological and behavioural functions; or
- c) without prejudice to Directive 96/8/EC, slimming or weight-control or a reduction in the sense of hunger or an increase in the sense of satiety or to the reduction of the available energy from the diet.

To be included in the Community list of permitted health claims, the claims shall be:

- (i) based on generally accepted scientific evidence; and
- (ii) well understood by the average consumer.

Member States provided the Commission with lists of claims as referred to in Article 13(1) by 31 January 2008 accompanied by the conditions applying to them and by references to the relevant scientific justification. These lists have been consolidated into the list which forms the basis for the EFSA consultation in accordance with Article 13 (3).

#### ISSUES THAT NEED TO BE CONSIDERED

##### IMPORTANCE AND PERTINENCE OF THE FOOD<sup>5</sup>

Foods are commonly involved in many different functions<sup>6</sup> of the body, and for one single food many health claims may therefore be scientifically true. Therefore, the relative importance of food e.g. nutrients in relation to other nutrients for the expressed beneficial effect should be considered: for functions affected by a large number of dietary factors it should be considered whether a reference to a single food is scientifically pertinent.

It should also be considered if the information on the characteristics of the food contains aspects pertinent to the beneficial effect.

##### SUBSTANTIATION OF CLAIMS BY GENERALLY ACCEPTABLE SCIENTIFIC EVIDENCE

Scientific substantiation is the main aspect to be taken into account to authorise health claims. Claims should be scientifically substantiated by taking into account the totality of the available scientific data, and by weighing the evidence, and shall demonstrate the extent to which:

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<sup>4</sup> OJ L12, 18/01/2007

<sup>5</sup> The term 'food' when used in this Terms of Reference refers to a food constituent, the food or the food category.

<sup>6</sup> The term 'function' when used in this Terms of Reference refers to health claims in Article 13(1)(a), (b) and (c).

- (a) the claimed effect of the food is beneficial for human health,
- (b) a cause and effect relationship is established between consumption of the food and the claimed effect in humans (such as: the strength, consistency, specificity, dose-response, and biological plausibility of the relationship),
- (c) the quantity of the food and pattern of consumption required to obtain the claimed effect could reasonably be achieved as part of a balanced diet,
- (d) the specific study group(s) in which the evidence was obtained is representative of the target population for which the claim is intended.

EFSA has mentioned in its scientific and technical guidance for the preparation and presentation of the application for authorisation of health claims consistent criteria for the potential sources of scientific data. Such sources may not be available for all health claims. Nevertheless it will be relevant and important that EFSA comments on the availability and quality of such data in order to allow the regulator to judge and make a risk management decision about the acceptability of health claims included in the submitted list.

The scientific evidence about the role of a food on a nutritional or physiological function is not enough to justify the claim. The beneficial effect of the dietary intake has also to be demonstrated. Moreover, the beneficial effect should be significant i.e. satisfactorily demonstrate to beneficially affect identified functions in the body in a way which is relevant to health. Although an appreciation of the beneficial effect in relation to the nutritional status of the European population may be of interest, the presence or absence of the actual need for a nutrient or other substance with nutritional or physiological effect for that population should not, however, condition such considerations.

Different types of effects can be claimed. Claims referring to the maintenance of a function may be distinct from claims referring to the improvement of a function. EFSA may wish to comment whether such different claims comply with the criteria laid down in the Regulation.

#### **WORDING OF HEALTH CLAIMS**

Scientific substantiation of health claims is the main aspect on which EFSA's opinion is requested. However, the wording of health claims should also be commented by EFSA in its opinion.

There is potentially a plethora of expressions that may be used to convey the relationship between the food and the function. This may be due to commercial practices, consumer perception and linguistic or cultural differences across the EU. Nevertheless, the wording used to make health claims should be truthful, clear, reliable and useful to the consumer in choosing a healthy diet.

In addition to fulfilling the general principles and conditions of the Regulation laid down in Article 3 and 5, Article 13(1)(a) stipulates that health claims shall describe or refer to "the role of a nutrient or other substance in growth, development and the functions of the body". Therefore, the requirement to describe or refer to the 'role' of a nutrient or substance in growth, development and the functions of the body should be carefully considered.

The specificity of the wording is very important. Health claims such as "Substance X supports the function of the joints" may not sufficiently do so, whereas a claim such as "Substance X helps maintain the flexibility of the joints" would. In the first example of a claim it is unclear which of the various functions of the joints is described or referred to contrary to the latter example which specifies this by using the word "flexibility".

The clarity of the wording is very important. The guiding principle should be that the description or reference to the role of the nutrient or other substance shall be clear and unambiguous and therefore be specified to the extent possible i.e. descriptive words/ terms which can have multiple meanings should be avoided. To this end, wordings like "strengthens your natural defences" or "contain antioxidants" should be considered as well as "may" or "might" as opposed to words like "contributes", "aids" or "helps".

In addition, for functions affected by a large number of dietary factors it should be considered whether wordings such as "indispensable", "necessary", "essential" and "important" reflects the strength of the scientific evidence.

Similar alternative wordings as mentioned above are used for claims relating to different relationships between the various foods and health. It is not the intention of the regulator to adopt a detailed and rigid list of claims where all possible wordings for the different claims are approved. Therefore, it is not required that EFSA comments on each individual wording for each claim unless the wording is strictly pertinent to a specific claim. It would be appreciated though that EFSA may consider and comment generally on such elements relating to wording to ensure the compliance with the criteria laid down in the Regulation.

In doing so the explanation provided for in recital 16 of the Regulation on the notion of the average consumer should be recalled. In addition, such assessment should take into account the particular perspective and/or knowledge in the target group of the claim, if such is indicated or implied.

## **TERMS OF REFERENCE**

### **HEALTH CLAIMS OTHER THAN THOSE REFERRING TO THE REDUCTION OF DISEASE RISK AND TO CHILDREN'S DEVELOPMENT AND HEALTH**

EFSA should in particular consider, and provide advice on the following aspects:

- Whether adequate information is provided on the characteristics of the food pertinent to the beneficial effect.
- Whether the beneficial effect of the food on the function is substantiated by generally accepted scientific evidence by taking into account the totality of the available scientific data, and by weighing the evidence. In this context EFSA is invited to comment on the nature and quality of the totality of the evidence provided according to consistent criteria.
- The specific importance of the food for the claimed effect. For functions affected by a large number of dietary factors whether a reference to a single food is scientifically pertinent.

In addition, EFSA should consider the claimed effect on the function, and provide advice on the extent to which:

- the claimed effect of the food in the identified function is beneficial.
- a cause and effect relationship has been established between consumption of the food and the claimed effect in humans and whether the magnitude of the effect is related to the quantity consumed.
- where appropriate, the effect on the function is significant in relation to the quantity of the food proposed to be consumed and if this quantity could reasonably be consumed as part of a balanced diet.
- the specific study group(s) in which the evidence was obtained is representative of the target population for which the claim is intended.
- the wordings used to express the claimed effect reflect the scientific evidence and complies with the criteria laid down in the Regulation.

When considering these elements EFSA should also provide advice, when appropriate:

- on the appropriate application of Article 10 (2) (c) and (d) in the Regulation, which provides for additional labelling requirements addressed to persons who should avoid using the food; and/or warnings for products that are likely to present a health risk if consumed to excess.

## **APPENDIX B**

### **EFSA DISCLAIMER**

The present opinion does not constitute, and cannot be construed as, an authorisation to the marketing of the food/food constituent, a positive assessment of its safety, nor a decision on whether the food/food constituent is, or is not, classified as foodstuffs. It should be noted that such an assessment is not foreseen in the framework of Regulation (EC) No 1924/2006.

It should also be highlighted that the scope, the proposed wordings of the claims and the conditions of use as proposed in the Consolidated List may be subject to changes, pending the outcome of the authorisation procedure foreseen in Article 13(3) of Regulation (EC) No 1924/2006.

## APPENDIX C

### FULL LIST OF STANDARD REFERENCE TEXTBOOKS USED FOR CHARACTERISATION PURPOSES

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