

Risk assessment of food additives and nutrient sources – new approach

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- EFSA ANS Panel – responsible for risk assessment of food additives and nutrient sources in the EU

EFSA Scientific Panel		Supporting Unit	
AFC Food additives, flavourings, processing aids & materials in contact with food 2003-2008	ANS Food additives & nutrient sources added to food 2008-	ANS 2008-2012	FIP 2012-
	CEF Food Contact Materials, Enzymes, Flavourings & Processing Aids 2008-	CEF 2008-2012	

ANS Panel WGs:

- WG 'A' Food additives and nutrient sources
 - WG 'B' Food additives and nutrient sources
 - WG Botanicals in food
 - WG Chemistry and Specifications
 - WG Exposure Assessment
 - WG on Toxicology
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- WG on Allura Red
 - WG on Aspartame

FOOD ADDITIVES



EFSA Journal 2012;10(7):2760

SCIENTIFIC OPINION

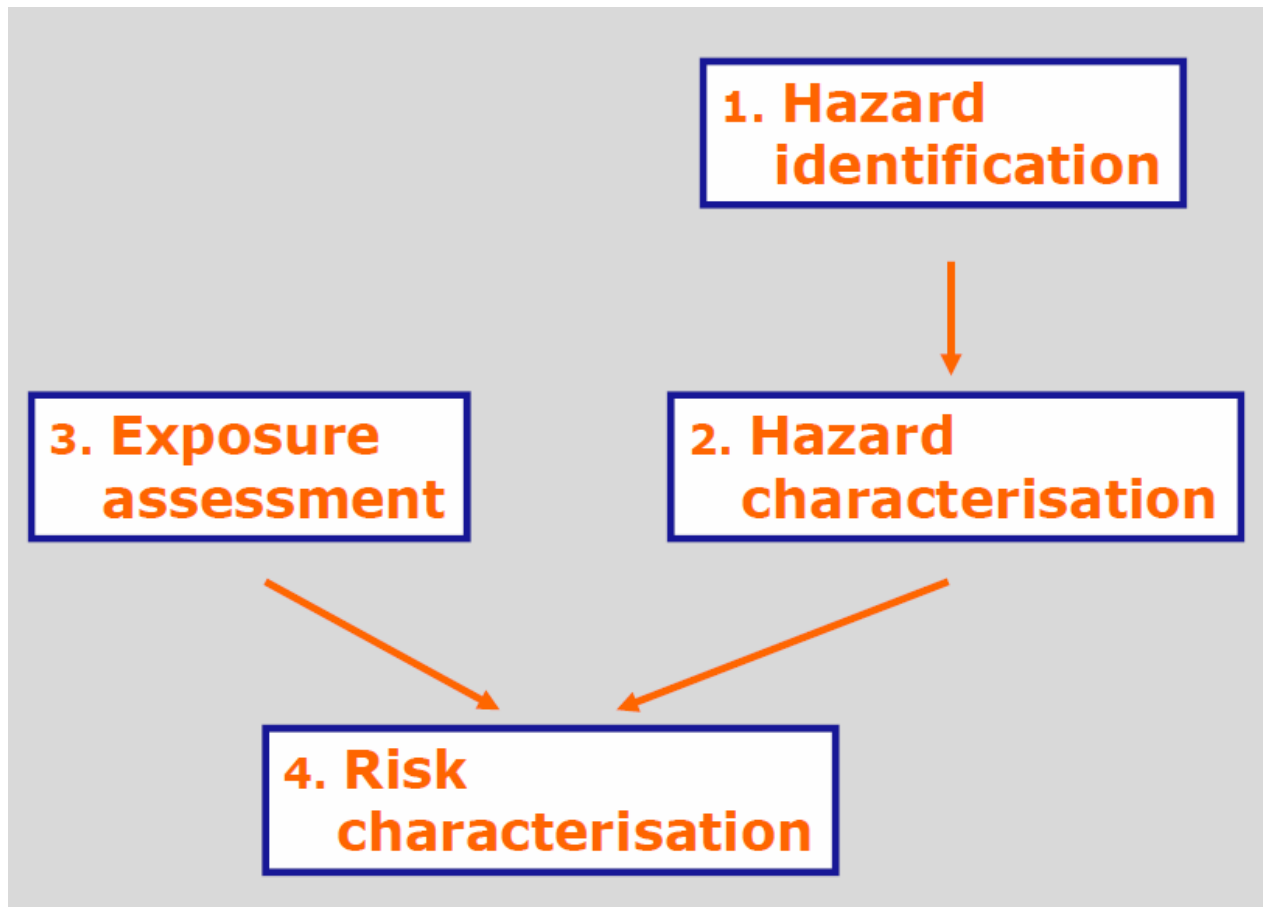
Guidance for submission for food additive evaluations¹

EFSA Panel on Food Additives and Nutrient Sources added to Food (ANS)^{2,3}

European Food Safety Authority (EFSA), Parma, Italy

- Replaces SCF Guidance from 2001
- RATIONALE
 - Reflect Panel's experience in evaluation of safety of food additives
 - Reflect scientific developments in risk assessment
 - Reflect EFSA Scientific Committee decision on developing of Guidances in several areas of food safety
 - Addressing the animal welfare: Reduction, Refinement & Replacement (3Rs)

Risk assessment paradigm



Chemistry & Specifications

- **Objective:** Identify the food additive, potential hazards, and define the material tested
- **Identity of the substance**
 - single substances (sorbic acid, sodium ascorbate, glycerol...)
 - simple mixtures (sorbitol syrup, lecithins...)
 - complex mixtures (mineral hydrocarbons, beeswax, shellac...)
 - Polymers (xanthan gum, pectins, modified starches...)
 - **Botanicals** (steviol glycosides, rosemary extracts...) Guidance on Botanicals – EFSA, 2009
 - **Nanomaterials** (Guidance on ENMs – EFSA, 2011)
 - **Containing/from microorganisms & GMOs** (Info on microbial origin, QPS, production process) Guidance on GMMs – EFSA, 2011

Chemistry & Specifications

- Specifications

Test material in the studies performed must conform to the proposed or existing specifications. If not, the relevance of these data to the substance under consideration should be demonstrated/explained.

- Manufacturing process
- Methods of analysis in food
- Stability of the substance, and reaction and fate in food

Proposed uses & Exposure assessment

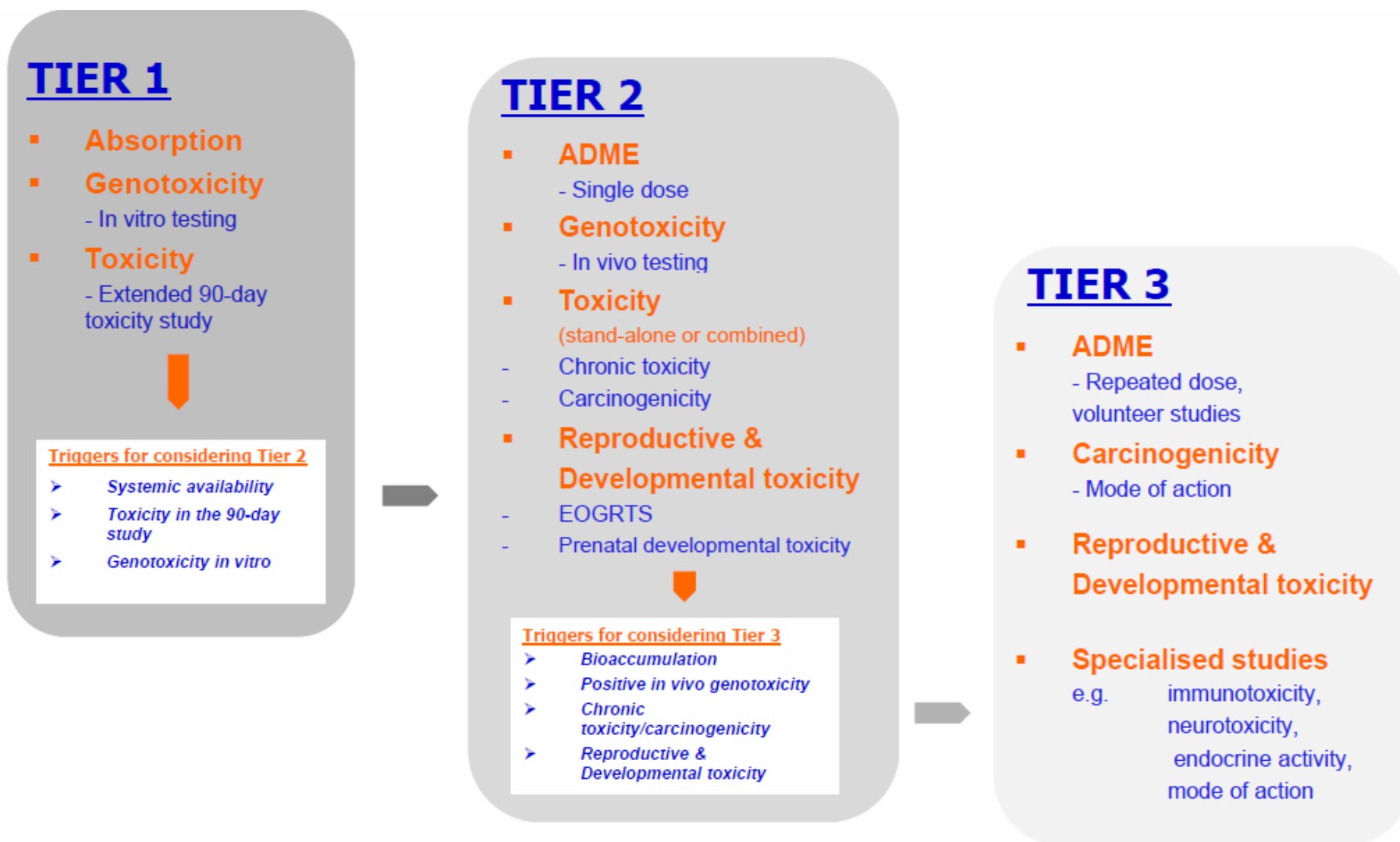
- Objective: estimate both the average exposure to a food additive and its distribution across the EU population (i.e. 95th percentile exposure)
- Two-scenario approach
 - **Authorisation** of a new food additive (**Scenario 1**)
 - **Modification** of proposed uses or use levels of an authorised food additive (**Scenario 2**)
- **New Assessment tool** (developed for the applicant)
 - **Food Additives Intake Model (FAIM) – Template**
 - Based on EFSA Comprehensive European Food consumption database

Consumption database

- Background: EFSA Comprehensive European Food Consumption Database
- Data collected by EFSA including detailed information for a number of EU countries in refined food categories and specific population groups, also partly covering children.
- To be downloaded from EFSA homepage:
<http://www.efsa.europa.eu/en/datexfoodcdb/datexfooddb.htm>

Toxicological studies

Tiered Toxicity Testing Diagram



Immunotoxicity

- **TIER 1** (Applicable to all additives)
 - **Indications of immunotoxic or immunomodulatory effects**
 - Repeated dose oral toxicity study (90-day) in rats (OECD TG 408)
- **TIER 2**
 - **Indications (or confirmation) of immunotoxic or immunomodulatory effects**
 - EOGRTS: cohort on developmental immunotoxicity in rats (OECD TG 443)
 - chronic toxicity/carcinogenicity (OECD TGs 452, 451 or 453)
- **TIER 3** (case-by-case approach)
 - **Specialised functional, mechanistic & disease model studies**
 - Further studies
 - (Guidance for Immunotoxicity risk – WHO/IPCS 7 assessment for chemicals IPCS, 2012)

Allergy/Hypersensitivity, Food Intolerance

- Allergy (immunological origin)
 - no validated studies
 - dermal or inhalation sensitisation studies to be considered (if relevant)
 - human data (from existing studies) available on oral food challenges &
 - prick testing to be used
 - evaluation of allergenic components (Guidance on Allergenicity of GMOs – EFSA, 2010)
 - weight of evidence approach
- Intolerance reactions (no immunological origin)
 - difficult to predict
 - no validated experimental methods
 - no clinical studies allowed prior to marketing
 - data from post-marketing surveillance
 - reporting of adverse effects (human studies)

NUTRIENT SOURCES ADDED TO FOOD

SOURCES OF VITAMINS AND MINERALS

- Regulation (EC) No 1925/2006 defines a framework for the authorisation of sources of vitamins and minerals and of certain other substances which can be used in food
- ANS Panels have established a standard for the assessment of the safety of nutrient sources and the bioavailability of the nutrients from their respective sources.
- Almost 300 opinions and statements covering 533 applications for sources of vitamins and minerals corresponding to 344 different substances adopted between 2006 and 2009
- This work was linked to the legal requirement to assess the safety of all the nutrient sources to be used in food supplements defined in the Directive (EC) No 2002/467.

“Other substances” with nutritional or physiological effects

- implementing measures for Article 8 of Regulation (EC) No 1925/2006 have been established in April 2012.
- the first two requests made by the EC for such safety evaluations were received by EFSA in January 2012 (*Ephedra* species and *Pausinystalia yohimbe*).



EFSA Journal 2009; 7(9):1249

SCIENTIFIC OPINION

Guidance on Safety assessment of botanicals* and botanical preparations intended for use as ingredients in food supplements¹**

EFSA Scientific Committee²

European Food Safety Authority (EFSA), Parma, Italy

- Level A: Safety assessment based on available knowledge.
- Level B: Safety assessment including newly generated data.

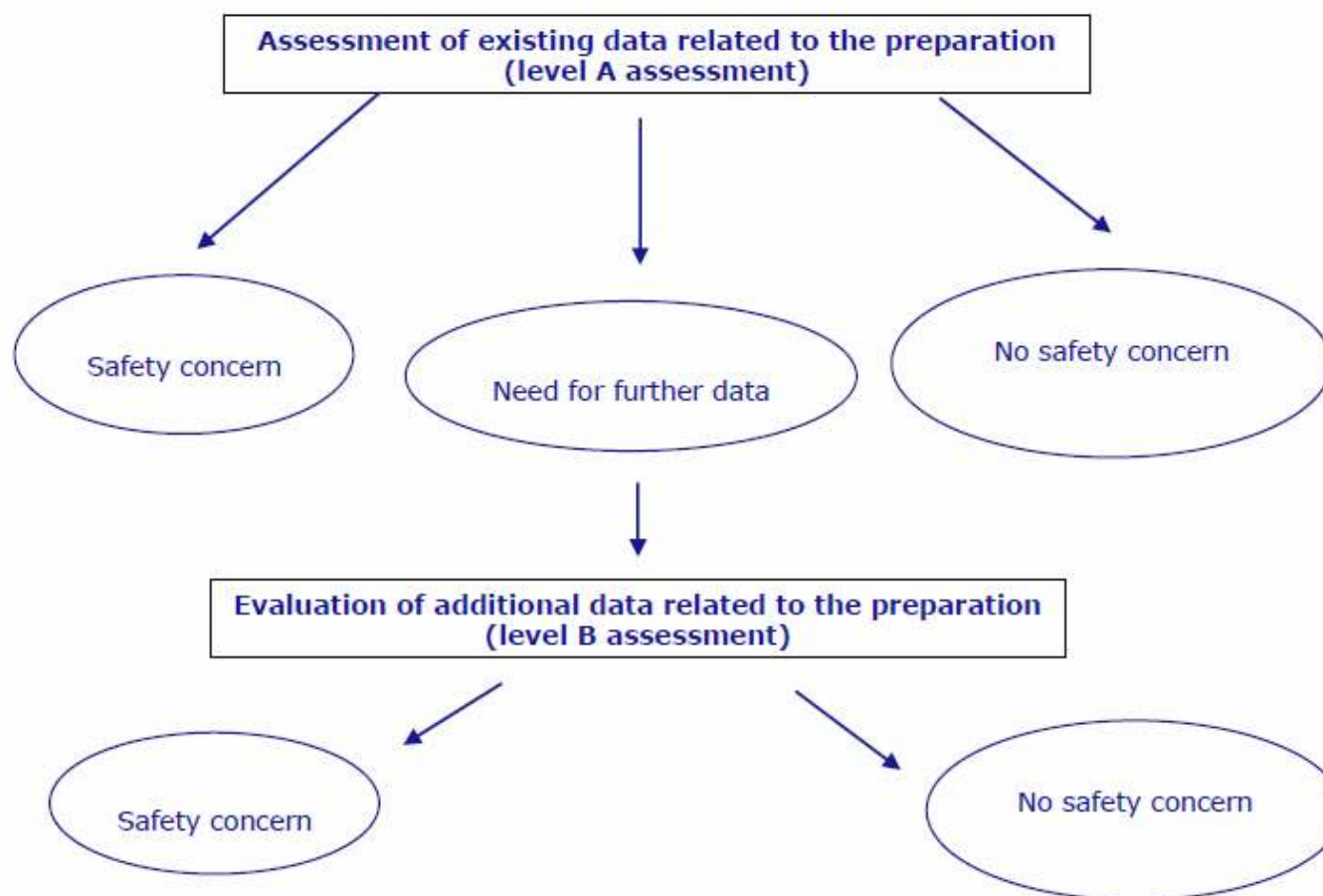


Figure 1: Proposed tiered approach for the safety assessment of botanicals and botanical preparations.

SCIENTIFIC REPORT OF EFSA

Compendium of botanicals reported to contain naturally occurring substances of possible concern for human health when used in food and food supplements¹

- A Compendium of botanicals reported to contain toxic, addictive, psychotropic or other substances that may be of concern has been produced to complement the present guidance document.
- The Compendium contains the following information:
 - The botanical denomination of the plant (genus, species and in some cases variety or subspecies when relevant), with synonyms in use.
 - The plant parts and substances of possible toxicological concern
 - Additional specific information of relevance for the risk assessment, e.g. adulterations
 - References, either to existing international / national list of plants, or to published literature when specific information has been added.
 - It lists in alphabetical order botanicals without any judgment on whether they are suitable or not suitable for food applications in Europe

SCIENTIFIC OPINION

Scientific Opinion on the evaluation of the safety in use of Yohimbe (*Pausinystalia yohimbe* (K. Schum.) Pierre ex Beille)¹

EFSA Panel on Food Additives and Nutrient Sources Added to Food (ANS)^{2, 3}

- The Panel concluded that according to the Guidance on safety assessment of botanicals yohimbe bark and its preparations belong to the category of botanicals/botanical preparations for which the available data are not sufficient to conclude on their safety or possible health based guidance values.
- Furthermore the Panel concluded that based on the information on the use of yohimbe bark and its preparations in food supplements, estimated exposure to yohimbine could be similar to or higher than that at which effects were reported from the use of yohimbine in medicinal products.