SAFETY OF CONVENTIONALLY SMOKED FOOD

OCCURENCE OF BIPHENYL, ANTHRAQUINONE & 2-PHENYLPHENOL IN SMOKED AND UNSMOKED PRODUCTS

EFSA - Technical meeting with stakeholders 27.03.25

Dr. Frank Schütt

Your speaker: Dr. Frank Schütt

- Food chemist with more than 20 years of professional experience
- Specific expertise in the analysis and legal assessment of teas, herbs and spices
- Member of several working groups and standardization committees of Food Federation Germany, German Tea Association, Tea Herbal Infusions Europe and DIN/CEN that deal with topics in the areas of residues, contaminants, microbiology, legal requirements for ecological products and vitamins

GBA Group in a nutshell

Facts & Figures

3000+
Colleagues

€230 million
Sales 2023

60+
Sites

13
Countries

The **GBA Group** is an international service provider in the life science industry.

We support the life science industry

We support private companies and public institutions in connection with their activities in the areas of research, product development, market development and consumer protection.

Pharma

Food

Environment

Water

Building Contaminants & Materials

Cosmetics

Medical Devices

Chemicals

Veterinary

Sustainability Services

Food Analysis

Overview of our analysis portfolio

Residues and Contaminants

- Pesticide analysis
- Mycotoxins
- MOSH/MOAH
- PAH
- PA & TA

Microbiology and Quality Parameter

- Pathogenes, e.g. Salmonella and Listeria
- Nutritional values and labeling
- Allergen testing
- Detection of Genetically Modified Organisms (GMO)

Reporting and ad-on Services

- Legal judgement on results and specification check
- GBA product food safety label available
- Express service with same day results

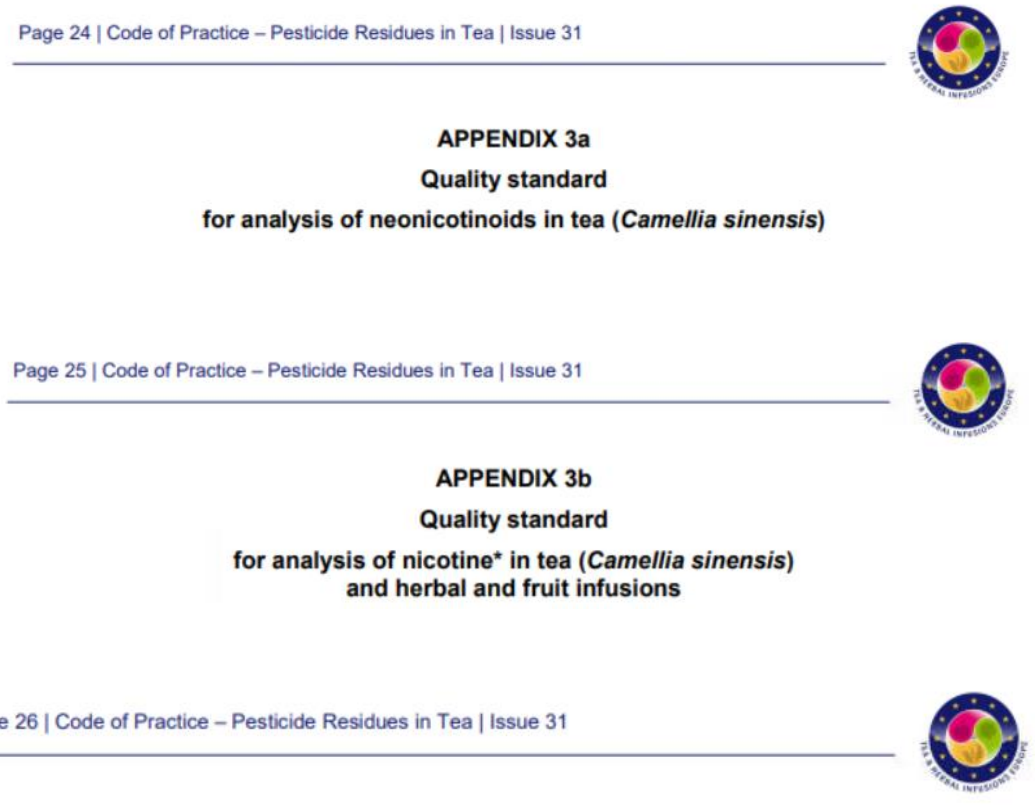
Food Analysis

Associations, committees & working groups

- Member of the pesticide working group of the Association of German Chemists (GDCh)
- Member of the pesticide standard committee of the DIN/CEN
- Member of several working groups at the Food Federation Germany (Lebensmittelverband Deutschland), e.g. pesticides, PA, MOSH/MOAH, organic products, food labeling)
- Certified Laboratory of the Association of Organic Processors, Wholesalers and Retailers (BNN)

Food Analysis

Analytical standards developed by working groups of the German Tea Council



APPENDIX 3a

Quality standard

for analysis of neonicotinoids in tea (*Camellia sinensis*)

APPENDIX 3b

Quality standard

for analysis of nicotine* in tea (*Camellia sinensis*)
and herbal and fruit infusions

APPENDIX 3c

Quality standard

for analysis of anthraquinone in tea (*Camellia sinensis*)

Analysis of biphenyl, anthraquinone & 2-phenylphenol

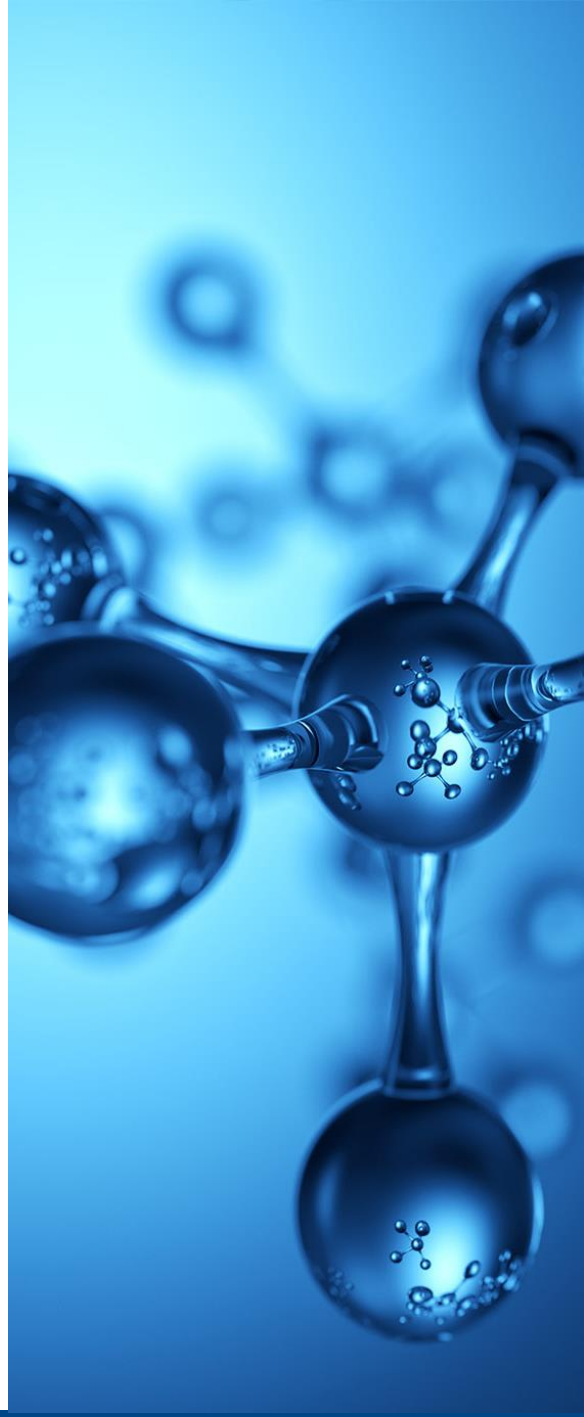
Analytical method

Methodology

- Analysis within the pesticide multi-method (QuEChERS - EN 15662) – GC-part
- Modified extraction for GC pesticides
- GC-MS/MS

Quantification

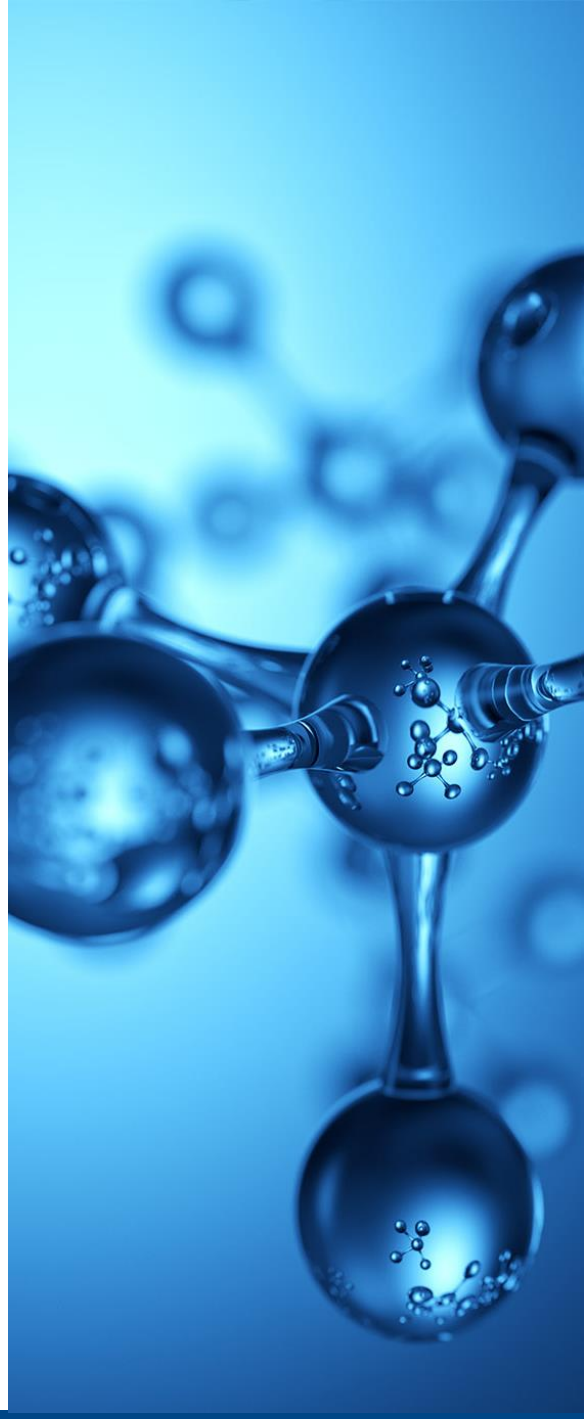
- Matrix calibration (tea)
- Quantification with isotope-labelled internal standards: anthraquinone D8, biphenyl D10, chlorpyrifos D10 -> Quantification of 2-phenylphenol in future: 2-phenylphenol D5 with acidic hydrolysis and LC-MS/MS measurement
- Anthraquinone: 3 transitions
- Biphenyl: 5 transitions
- 2-Phenylphenol: 2 transitions



Analytical method

QM-measures

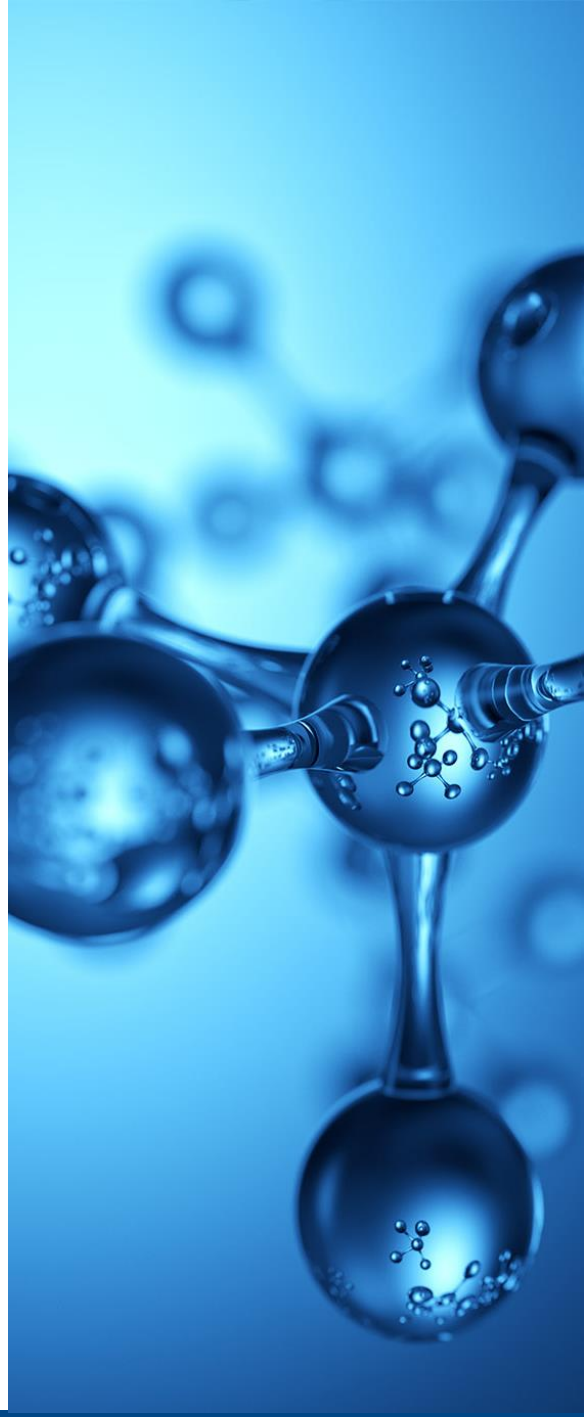
- Validation of the following complex matrices:
  - Mix matrix (cardamom, tea, parsley), dried
  - Paprika (Sweet pepper), dried
  - Basilikum, dried
  - Chamomile
  - Tea
  - Tumeric



Analytical method

Proficiency tests (Selection)

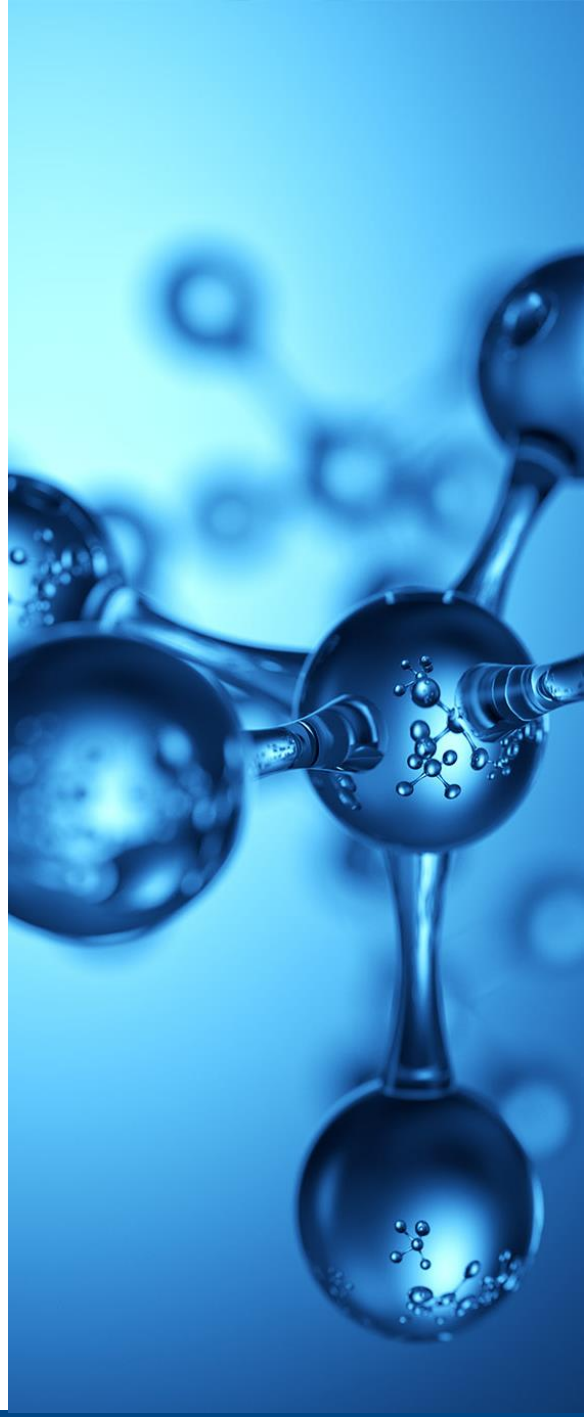
Matrix	Parameter	Assigned Value [mg/kg]	Z-Score (GBA)	Year	Organizer
Tea, black	Anthraquinone	0.037	0.0	2016	Proof-ACS
	Biphenyl	0.038	-0.1		
	2-Phenylphenol	0.084	-0.2		
Tea, green	Anthraquinone	0.076	0.51	2020	FAPAS
	2-Phenylphenol	0.072	0.36		
Tea, black	Anthraquinone	0.050	-0.3	2022	Proof-ACS
	Biphenyl	0.045	0.0		
Tea, green	Anthraquinone	0.034	0.2	2023	Proof-ACS
	Biphenyl	0.026	0.3		
Tea, black	Anthraquinone	0.045	0.6	2024	Proof-ACS



Biphenyl, Anthraquinone & 2-Phenylphenol in smoked and unsmoked products

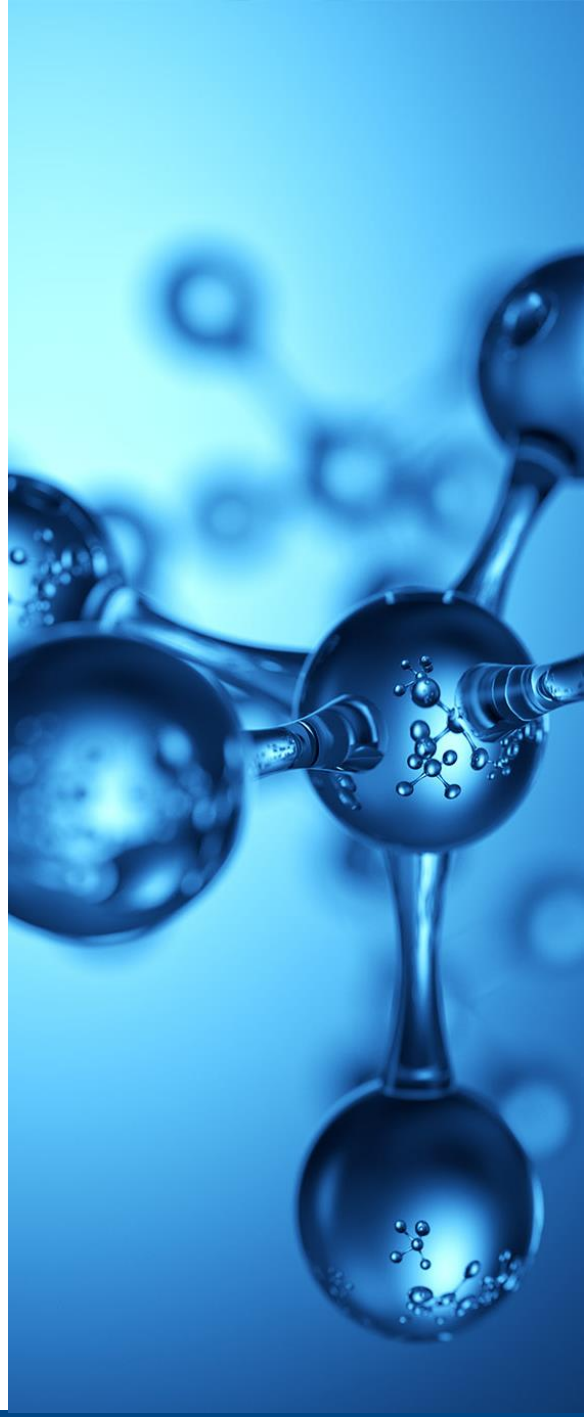
Biphenyl – Results for 2023 – 2025YTD

Product	Total number	>LOQ (0.005 mg/kg)	Range of positive results [mg/kg]	Median [mg/kg]
Paprika/Chilli, unsmoked	2100	44 (2.1 %)	0.011 – 0.075	0.021
Paprika/Chilli, Smoked	125	122 (98 %)	0.01 – 1.3	0.2
Tea, unsmoked	4500	21 (0.5 %)	0.011 – 0.07	0.026
Tea, smoked	30	30 (100 %)	0.07 – 0.97	0.48



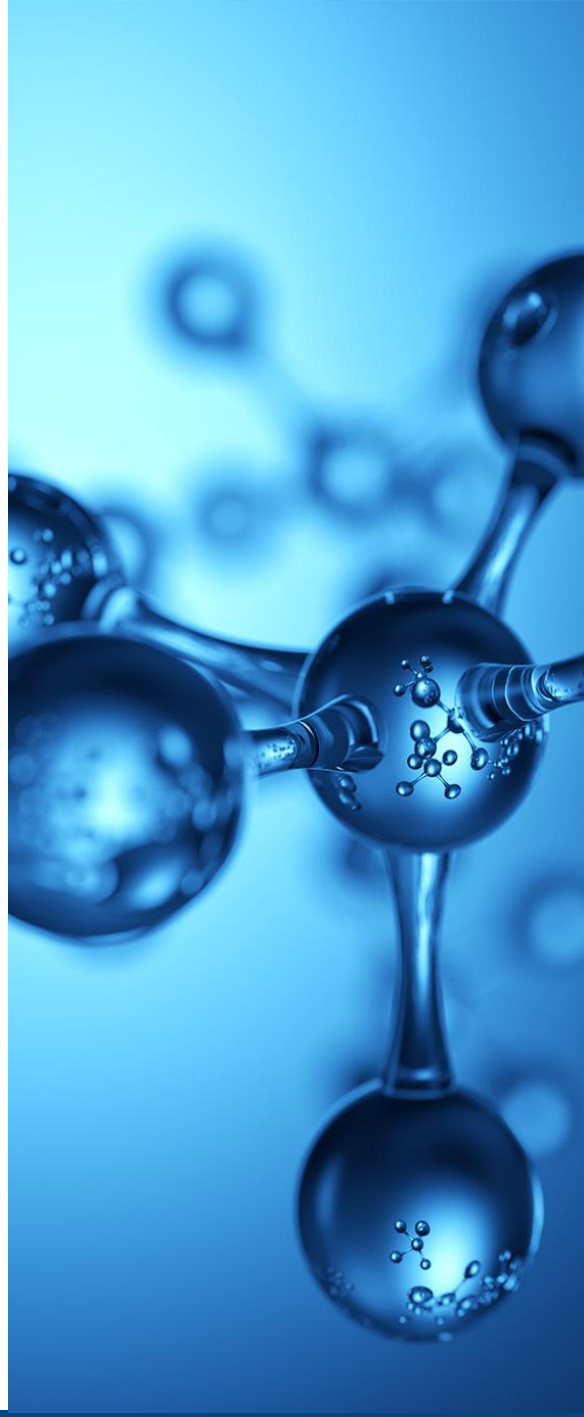
Anthraquinone – Results for 2023 – 2025YTD

Product	Total number	>LOQ (0.005 mg/kg)	Range of positive results [mg/kg]	Median [mg/kg]
Paprika/Chilli, unsmoked	2100	67 (3.3 %)	0.005 – 0.031	0.008
Paprika/Chilli, Smoked	125	111 (89 %)	0.01 – 0.14	0.027
Tea, unsmoked	4500	2180 (48 %)	0.005 – 0.18	0.009
Tea, smoked	38	38 (100 %)	0.005 – 0.31	0.12



2-Phenylphenol – Results for 2023 – 2025YTD

Product	Total number	>LOQ (0.005 mg/kg)	Range of positive results [mg/kg]	Median [mg/kg]
Paprika/Chilli, unsmoked	2100	7 (0.5 %)	0.012 – 0.026	0.014
Paprika/Chilli, Smoked	125	89 (71,2 %)	0.01 – 0.34	0.039
Tea, unsmoked	4500	7 (0.2 %)	0.01 – 0.085	0.013
Tea, smoked	28	28 (100 %)	0.016 – 0.16	0.072



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Thank you! Please do not hesitate to contact us.

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