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SPICED – Dedication for the safety of spices and herbs

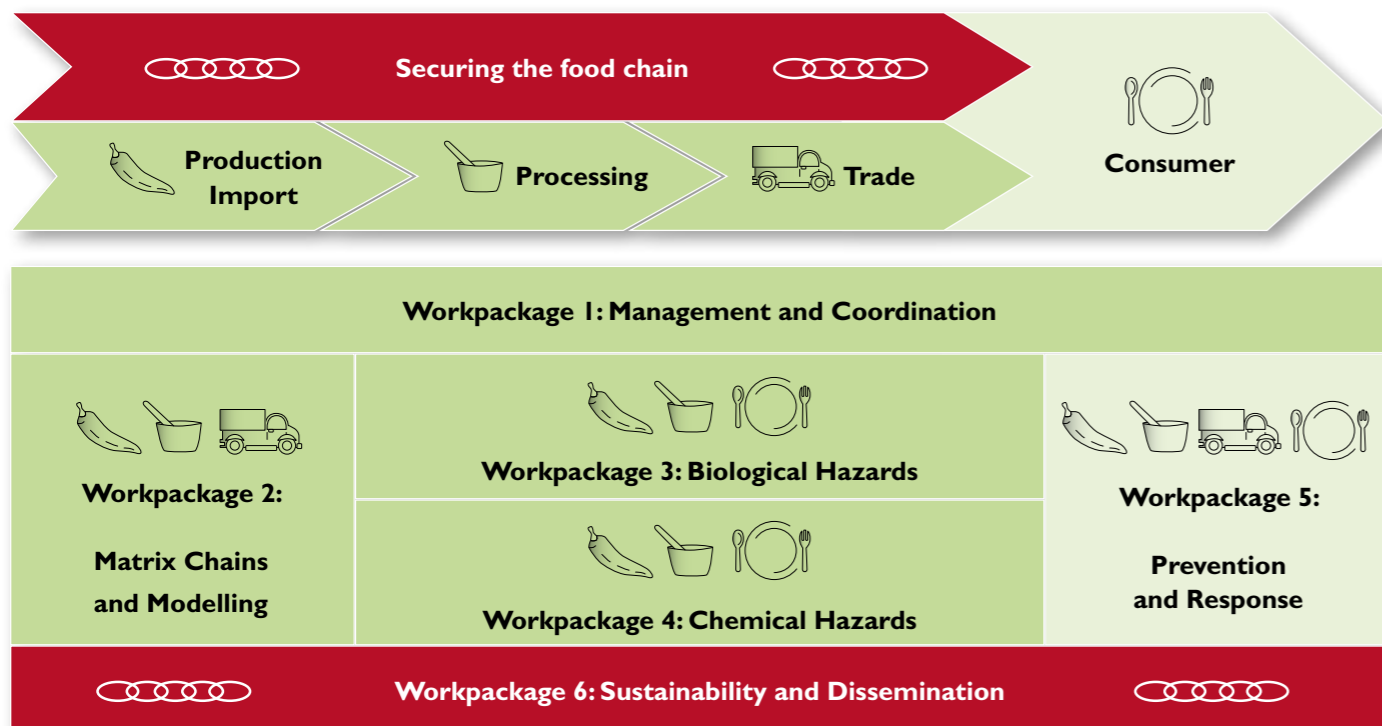


The EU project SPICED is going to be finalised in June 2016. The project that started in July 2013 aims on securing the spices and herbs commodity chains in Europe against deliberate, accidental or natural biological and chemical contamination. The European Union (EU) market is one of the largest markets for spices and herbs in the world. Mostly, these commodities are imported as dried raw materials from producing regions outside of the EU. Contaminations with microbiological and chemical agents can take place at numerous vulnerable points within production and supply chains and can pose a serious risk for farmers, processors, and consumers. The identification of contaminated spices and herbs as a cause of a food-borne infection or intoxication would be difficult, because consumers and experts often focus on major food ingredients. Moreover, many detection methods are less suitable for the heterogeneous herb/spice matrices. But as quantitatively minor components

spices and herbs hold a major potential to contaminate a wide range of products due to a large-scale distribution.

Within SPICED, eleven experienced partners from seven EU countries work together to carry out intensive research on the project's tasks during the 3-year period. The research has been conducted within four workpackages (WP 2-5) as illustrated in the scheme of the project structure (see next page).

In WP 2 Matrix Chains and Modelling intensive analyses of spice production and supply chains, including trade network analyses of paprika and pepper, were performed in order to identify vulnerable points. Moreover, within this workpackage, a knowledge database on biological agents, spice/herb matrices, and processes was established. This was done in order to collect and evaluate information on spice/herb producing operations and potential hazardous biological contami-



The structure of the project SPICED spanning from production and import to the consumer within all workpackages.

nants. A special focus was set on parameters related to growth, survival and tenacity data of biological agents in spice/herb matrices. Data collection was accompanied by detailed experimental analyses and by modelling approaches. In addition, sampling strategies for the detection of contaminations were analysed and optimised. Both paprika cultivation and processing technology have been assessed for possible sources of contamination, and vulnerable points in the spice paprika production chain have been characterised.

The WP 3 Biological Hazards aims on the characterisation of the properties of biological hazardous contaminants and their reliable and standardised detection in spice and herb matrices. Extensive work has been conducted on inoculation methods for artificial spiking experiments. The final experiments regarding the survival of biological agents in different herb/spice matrices are in progress. Additionally, substantial achievements could be made in method optimisation regarding the extraction of bacteria or bacterial DNA from con-

ditions as well as on the detection of diverse biological contaminants in spices and herbs. Antimicrobial activities and interfering substances of these heterogeneous matrices can be a challenge when using enrichment and detection methods standardised for other food matrices. To validate improved methodologies for the detection of *Salmonella* in spices, a ring trial has been performed.

The WP 4 Chemical Hazards aims at developing a rapid and cost-efficient set of methodologies for the detection of natural and accidental as well as of deliberate contaminations of spices and herbs with chemical agents. To ensure authentication of spices/herbs and to detect chemical adulterations, several spectrometric and spectroscopic fingerprinting methods were applied. Representative sets of authentic and adulterated spice and herb samples were analyzed. Based on the fingerprinting data, various chemometric (one-class) classification techniques have been successfully developed and evaluated to enable the distinction of authentic (non-adulterated) samples from adulterated/contaminated samples.

Within the WP 5 Prevention and Response focus is given on evaluating the possibilities and limitations of available mechanisms within the spice and herb supply chains to improve prevention of and response to foodborne incidents caused by biological and chemical contaminations. For this purpose, reporting, alerting, and monitoring systems have been analysed. Moreover, data on the decontamination of spices and herbs have been collected in a database and are evaluated, considering also the legal aspects. Literature data were accomplished by own experiments on the reduction of biological contaminations. Therefore, several decontamination methods have been investigated for their efficacy and possible impact of spice paprika composition and quality. Assessing decontamination efficacy, changes in the composition/diversity of the remaining microflora after treatment have been described.

All necessary management activities within SPICED, covering administrative, financial, and contractual issues, have been conducted by the European Com-

mission, the project coordinator, and the project partners on a professional basis within WP 1. An efficient communication with the European Commission, the project partners, integrated stakeholders, and external partners has been ensured during the whole project.

Efficient communication is also of particular importance for the dissemination of the project's objectives and results, which is the aim of WP 6. Several workshops and other events have been successfully conducted and a whole bunch of dissemination materials have been prepared and updated. The active cooperation between the project partners from different European countries namely Austria, Germany, Hungary, Ireland, Latvia, the Netherlands and Slovakia should be highlighted. Over the course of the project, the project

partners met during Annual Meetings, Workpackage Meetings, and workshops in order to present project results and to exchange views with the relevant stakeholders. The project is now in the final phase and the last deliverables and milestones have to be finalised.

Scientific results and new knowledge need to be communicated in order to make the findings usable for improving the safety of spices and herbs. Part of the outcome of SPICED will be presented beginning of June in the international SPICED Symposium "Spices and Herbs – A Risk-Free Taste Experience?" in Berlin (see info box). This symposium will provide state-of-the-art data on food safety in the spice and culinary herb chain by external experts and SPICED project partners. The two-day symposium is addressed to interested stake-

holders from industry, government and academia to stimulate an exchange of the various stakeholders within five topical sessions and a poster session. Especially young scientists with poster contributions are supported and could apply for a financial funding. In addition to the other dissemination activities, the SPICED Consortium plans the publication of a special issue of the peer-reviewed journal Food Control. Even if the project ends, the research and cooperation on the safety of spices and herbs will be continued within the tight network built up with SPICED.

COMING UP:

SPICED SYMPOSIUM BERLIN

**"Spices and Herbs –
A Risk-Free Taste Experience?"**

From the 1st to the 2nd June 2016
in Berlin, Germany

Talks and posters will be presented by SPICED project partners and external experts.

Registration is open until 15 May 2016.

Please find more information and the program here:

[SPICED symposium](#)



FACT BOX

Do you know?

- That in 2013 the import value of pepper in the EU was about 750,923.00* kg?
- The pepper plant is an ever green shrub growing up to 4 m in height. Its small flowers are produced on pendulous spikes which are 4 to 8 cm long at the leaf nodes.
- From 100 kg fresh pepper fruits only 35 kg crop yield is left.
- Black pepper accounts for about 75% of total world production.
- The journey of pepper takes about 12 days from the country of origin to Europe.
- In former times the term “pepper sack” was used to refer to rich people due to pepper’s high value.

*FAOSTAT



May I introduce nutmeg and mace to you

- The nutmeg tree (*Myristica fragrans*) is a plant from the family of Myristicaceae and its seeds are used as a spice.
- The origin of the nutmeg tree are the Banda Islands (molluccas). The main production areas are Indonesia and Grenada (inferior), although Mauritius has a production history. Nutmeg is the main export product of Grenada and is therefore part of the flag of Grenada.
- Nutmeg and mace are two different parts of the same fruit of the nutmeg tree. The fruit can only be harvested 15 years after planting the large tree.
- Culinary use: processed meats, stewed fruits, puddings and cakes, seasoning of milk-based sauces and other flavoured dishes. In Indonesia, nutmeg is used to make jam.
- Medical use: It is a stimulant, an aphrodisiac and a narcotic in excessive quantities.
- Other use: Its oils are used in ointments and perfumes.



WHO IS WHO...

Gerhard Weber is the Secretary General of the European Spice Association (ESA) representing approx. 350 spice companies located in the EU. The ESA is integrated stakeholder in the SPICED project.

For the spice industry networking is a key. The spice business is global, so are the challenges, the cooperation and the spirit. Hence, the spice industry is striving towards comprehension of the entire supply chain for spices. Associations and companies from Third Countries are associated members of ESA helping to transfer knowledge about legislation, quality and hygiene into the origins. On the other hand, these contacts facilitate understanding for spice growing and processing in the countries of origin.

The production of safe, clean spices is a continuous challenge in a world of change and globalisation. Bringing taste into food and meeting customer demands is the aim of the spice business, it is the spice industry's contribution to culture and life style.



Gerhard Weber,
Secretary General of the European Spice Association

SPICED NEWS

Second annual meeting from 6th to 7th of July 2015 in Wageningen, the Netherlands.

The project's 2nd Annual Meeting with all project partners was organised by DLO Foundation - RIKILT (DLO) and Wageningen University (WU) at Wageningen Campus of RIKILT Wageningen UR. The meeting was followed by the workshop “Spices, herbs and authenticity” on 8th of July 2016 that was very well attended including many participants from the industry. The presentations and discussions on the challenges and methodologies on the identification of food fraud in spices and herbs were especially informative for all participants. The project partners DLO, WU, BfR and BIOR organised the workshop.

SPICED Stakeholder workshop at EXPO, 14th of October 2015 in Milan, Italy

The consortium of the SPICED project organised a stakeholder workshop during the EXPO 2015 in Milan, Italy. The workshop was a platform to discuss SPICED results together with stakeholders and took place at the Austrian Pavillon on 14th of October 2015 directly before the launch of the EFSA conference “Shaping the Future of Food Safety”. The SPICED experts gave an overview about their findings and know-how gain within the project.



SPICED 3rd Workpackage Meeting, Bratislava, Slovakia, 23rd to 24th of November 2015

From 23rd to 24th of November, the last Workpackage Meeting within the SPICED project took place at the National Agricultural and Food Centre (VUP) in Bratislava. All partners supported this gathering and for each workpackage the work done and the ongoing tasks for the last period of the project were presented.

During the workshop “Methodologies to identify biological hazards in spices and herbs” on 25th of November 2015 experts from various Slovakian governmental and research institutions met with the SPICED consortium to be informed about the latest achievements on optimisation of biological hazard diagnostics with regard to the difficult matrices of spices and herbs.



COMING UP EVENTS

- **The 3rd Annual Meeting** will be held from 30th to 31st May 2016 in Berlin, Germany
- **SPICED Symposium “Spices and Herbs – A Risk-Free Taste Experience?”**
from 1st to 2nd June 2016 in Berlin, Germany
- **The hands-on exhibition “Spices and Herbs – a risk-free taste experience?”**
will be presented in the Science Centres “Welios” (Wels, Austria), “Energia Avastuskeskus” (Tallinn, Estonia)
and “Aberdeen Science Centre” (Aberdeen, UK)

CONTACT

This newsletter has been produced by the SPICED Consortium. If you would like to comment on any of the content of this newsletter please contact: spiced@bfr.bund.de



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Project partners

1. Bundesinstitut für Risikobewertung (Federal Institute for Risk Assessment), Germany
2. Austrian Agency for Health and Food Safety, Austria
3. Institute of Food Safety, Animal Health and Environment, Latvia
4. DLO Foundation – RIKILT, the Netherlands
5. FUCHS Gewürze GmbH, Germany
6. National Agricultural Research and Innovation Centre, Hungary
7. RTD Services, Austria
8. University of Limerick, Ireland
9. National Agricultural and Food Centre, Slovakia
10. Bundeswehr Research Institute for Protective Technologies and NBC-Protection, Germany
11. Wageningen University, the Netherlands

Integrated stakeholders

12. European Spice Association, Germany
13. Fachverband der Gewürzindustrie, Germany
14. Van Hees GmbH, Germany
15. Kräuter Mix GmbH, Germany



Coordinator



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