

FFoQSI
**Austrian Competence Centre
 for Feed and Food Quality,
 Safety and Innovation.**

Programme: COMET – Competence
 Centers for Excellent Technologies

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FOOD AND FEED ANALYSIS AT ITS LIMITS: CHALLENGES AND SOLUTIONS

DEVELOPMENT OF A LC-MS/MS BASED MULTI-CLASS METHOD FOR THE QUANTIFICATION OF >1,000 BIOTOXINS AND CONTAMINANTS IN COMPLEX FEEDSTUFF

Due to globalization of trade and the associated growing public awareness for food and feed safety, quality control along the entire food and feed chains has gained increasing importance in the last decades. Therefore, the need for precise and reliable analytical methods for a broad range of various and frequently complex food and feed classes is increasing.

As part of the FFoQSI project 1.3 an innovative LC-MS/MS (liquid chromatography coupled to tandem mass spectrometry) based confirmatory approach was developed which allows the identification of different natural and anthropogenic agricultural pollutants, with special focus on global trade. This so

far worldwide unique analytical approach enables the simultaneous quantitative determination of over 700 secondary fungal metabolites (including mycotoxins exhibiting legally binding maximum limits), 500 pesticides, 150 veterinary drugs and 50 plant toxins and was developed and validated for complex feedstuff.

Results of this project have been presented at 10 international conferences such as the RAFA (Recent Advances in Food Analysis) in Prague or the WMF (World Mycotoxin Forum) in Belfast. Furthermore, several scientific articles both in peer reviewed

SUCCESS STORY

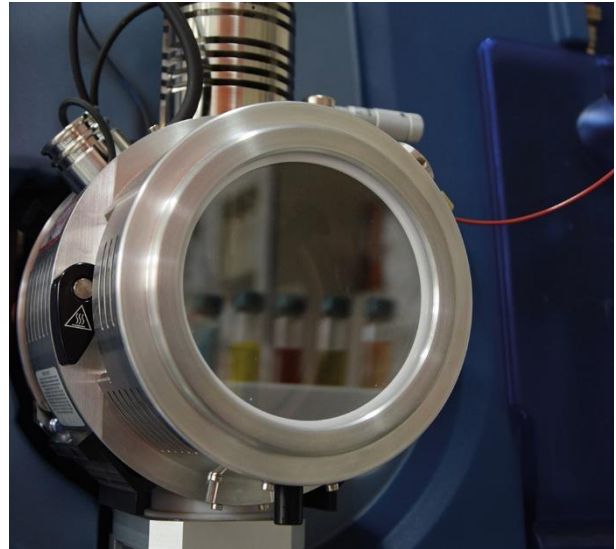
journals and trade magazines related to this work have been published.

The global supply situation is characterized by "international sourcing", which is particularly true in the area of feed trade. Uncertainties in the exact composition of the feed rations is often an invincible problem for the development of quantitative routine-based laboratory methods. In order to solve this problem, development and validation steps were carried out on the basis of so-called "model matrices". This artificially produced sample material enables a precise simulation of the effects that arise from the heterogeneous composition of real-world feed samples and thus ensures a unique and precise characterization of this complex sample material. A big advantage of this approach is the easy transferability to other areas of the value chain. The analysis of complex foodstuffs such as muesli, spices or fruit juices could benefit from this approach in the future.

Another unique feature of this approach is the high number of substances that can be quantitatively determined within an analytical cycle. The simultaneous determination of different substance classes provides a comprehensive evaluation of total load patterns in the feed and subsequently also in the food sector. Furthermore, the method provides a prevalence data basis for the investigation of

synergistic effects of a "cocktail" of co-occurring compounds from different contaminant classes.

This straightforward and generic approach is of particular interest for routine orientated and accredited national laboratories, as it is both cost-effective and reliable and has already been offered to and established by several partner companies.



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Through the successful development of this unique approach, FFoQSI has a high degree of responsibility for ensuring feed safety in Austria and Europe.

Project coordination (Story)

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Project partners

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- Biomin Holding GmbH, Austria
- Barilla G.R. F.lli SpA, Italy

This success story was provided by the consortium leader/centre management and by the mentioned project partners for the purpose of being published on the FFG website. Further information on COMET: www.ffg.at/comet