Development of quantitative and qualitative molecular biological methods to identify plant and animal species in foods

MOLSPEC-ID

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BACKGROUND

Recent investigations demonstrated that fraudulent replacement of food components as well as adverse reaction to unexpected food ingredients are quite common problems. Up to now official methods for the detection of plant and animal species in foods are mainly based on protein analysis. The project aims to develop DNA-analytical methods for qualitative and quantitative identification of plant and animal species in foods to monitor product safety and traceability. The project includes the comparison of nucleic acid-based methods with protein-based ones. A research aspect will be enhancing throughput by introducing multiplex-PCR, PCR-ELISA and chip technology. Four methods for several species will be validated in interlaboratory studies. Furthermore a public database will be established containing information about methods to identify plant and animal species in foods.

OBJECTIVES

Main objectives of the project will be the development of methods suited for the monitoring of potential allergenic compounds, fraud and to ensure correct labelling. Thus a panel of species in foodstuffs will be investigated which might play a role in this regard. The project includes two aspects: development of qualitative methods which are useful to identify a broad variety of different species including exotic species, species of regional interest and hidden potential allergenic compounds. Quantitative methods will be developed with respect to threshold values for supporting the surveillance of legal requirements. Research will be performed on the following aspects: enhancing sample throughput and applicability and comparison of DNA with protein analytical methods. Four methods will be validated in interlaboratory studies. In addition a database will be developed including all information to identify species in foodstuffs.

(EXPECTED) RESULTS AND ACHIEVEMENTS

* Recommendations on sample preparation suited also for quantitative analysis.
* Development of qualitative DNA- and protein- based methods as well as quantitative methods.
* Development of methods enhancing throughput in food analysis.
* Comparison between protein- and DNA-based methods.
* Evaluation of four methods in interlaboratory studies.
* Establishing a database, containing these methods.

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