



EUROPEAN COMMISSION
DIRECTORATE-GENERAL
JOINT RESEARCH CENTRE
Directorate F - Health, Consumers and Reference Materials
Food & Feed Compliance



Mandate for an ENGL Working Group on DNA Extraction (WG-DNAex)

Background

The extraction of DNA of appropriate quality and sufficient yield for further analysis from a food, feed or seed sample is the first step in the analytical procedure for GMO testing. Many different extraction methods, utilising various principles, have and are being developed/established/validated and used to extract DNA from such samples. In-house methods, commercial kits and commercial automated DNA extraction methods are available. Many modifications of the basic approaches are applied for specific samples in different laboratories. Some methods may be more suitable for certain matrices than others, and the quality of the extracted DNA may affect the downstream analytical steps.

The EURL GMFF organised a training workshop on DNA extraction from food and feed on 7-9 June 2017, and collected information from ENGL members in a questionnaire on this topic (March-April 2017). Differences among approaches applied by laboratories to isolate DNA from different matrices were identified. The complete harmonisation of DNA extraction methods may be difficult to achieve, but there is a need to harmonise the approach for choosing a method and to provide guidance on this.

Tasks

In order to capture the current knowledge and experiences of participants and make it available to a wider audience, the WG will perform the following tasks:

- To create and manage a dedicated webpage on ENGLnet which is regularly updated with new information when it becomes available. This space, which would only be useful if members actively contribute to it, will provide:
 - A shared space where ENGL member can contribute when a new sample/method is being used;
 - A forum for bringing together labs that have common problems and suggest solutions to this;
 - A mechanism for capturing raw data on approaches and methods that could be used as part of a Decision Support System;
- To produce a Guidance Document by giving consideration for inclusion of the following topics:

- Summarising the knowledge on DNA extraction methodologies (including purification, analysis of DNA quantity and quality) reported in the literature incl. international standards, and within ENGL;
- Providing best practices in the selection of DNA extraction methods and DNA quality assessment, and their applications to food, feed, seed and plant matrices;
- Provide practical guidance on in-house validation and verification of DNA extraction methods;
- Grouping sample matrices according to relevant criteria that would affect their DNA extraction requirements, e.g. proximate composition (fat, protein, carbohydrates), or degree of processing;
- Comparing characteristics and limitations of various DNA extraction kits on the market and of the different CTAB protocols used;
- Providing a list of sample types and corresponding options for their DNA extraction method incl. recommended modifications;
- Developing a decision matrix for the selection of DNA extraction methods that are suitable for certain food, feed and seed types;
- Reviewing the acceptance criteria for DNA quality assessment for various analytical downstream steps;

- To contribute to a new training workshop in this field to be held in 2019 or 2020.

Timeline

This group is expected to meet 4 times, with the first meeting being organised before the end of 2017. The group may continue to exist as an Advisory/Task group, meeting regularly in order to keep the webpage alive and updated, and to prepare further training workshops. Additional web-based consultations may be organised to clarify certain topics, if necessary.