Species identification of gelatine in yoghurt and dairy desserts by UPLC-ESI-Q-TOF-MS

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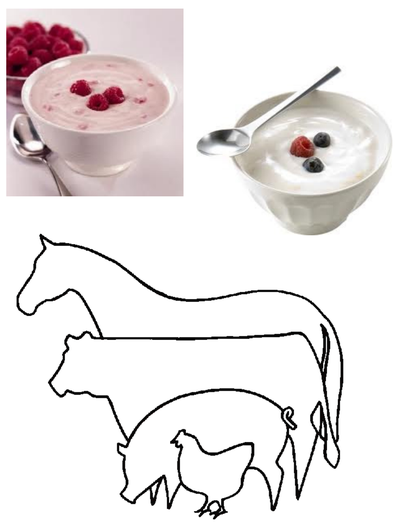
Summary

- The use of a **UPLC-MS/MS method** to determine the **source of gelatine** in **yoghurt and dairy desserts** from various retailers in the Netherlands
- Data analysis using Mascot and NCBI database
- Preliminary study:
  - Products labelled with the origin of the gelatine were found to be labelled correctly
  - Products with unspecified gelatine mainly contained gelatine from bovine source, two products contained gelatine from porcine source

Introduction

The use of **unspecified gelatines** in food products is a problem for people with specific diet wishes, such as people with an allergy, a specific religious background or a vegetarian diet. Accurate and truthful labelling of the **source of gelatine** is therefore needed and this requires a robust method that can **identify and discriminate** between the gelatines derived from different animal species.



Method[1]

Yoghurt
↓
Centrifugation
↓
Protein extraction step
↓
Centrifugation & Concentration
↓
SPE extraction
↓
Drying
↓
Tryptic digestion
↓
LC-MS/MS analysis
↓
Data analysis (Mascot & NCBI database)
↓
Identification

Gelatine

- **Protein** and peptide mixture derived from **collagen** by extensive hydrolysis
- Used as **gelling agent** in food industry
- **Differentiation** between bovine and porcine gelatin by **differences** in **amino acid sequence**

Samples

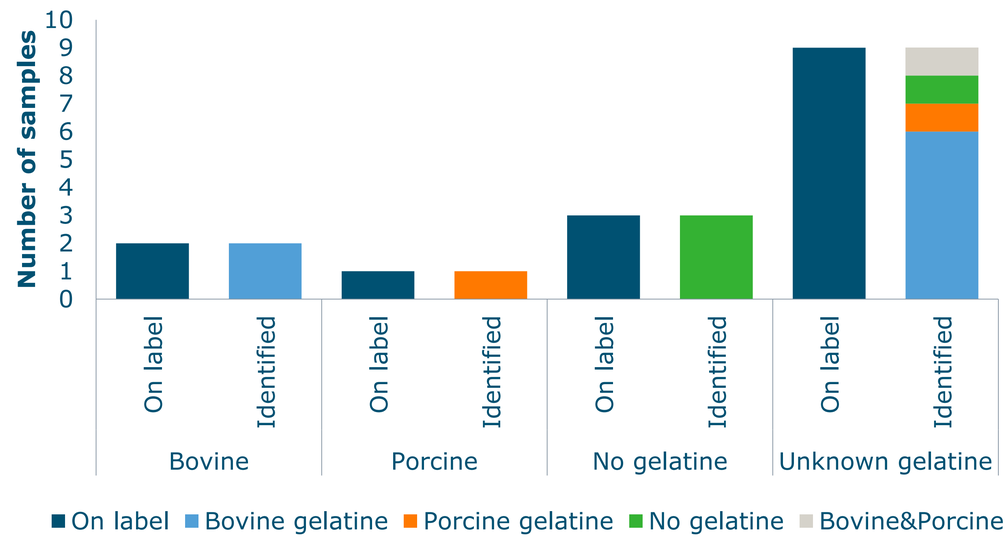
- In this preliminary study **fifteen yoghurts** from different retailers in the Netherlands were analysed
- All extracts were **analysed in duplicate**
- Validation will be carried out in the future

Data analysis

- Data analysis was performed using Mascot[2]
- To discriminate between gelatine from bovine and porcine source the NCBI database was used

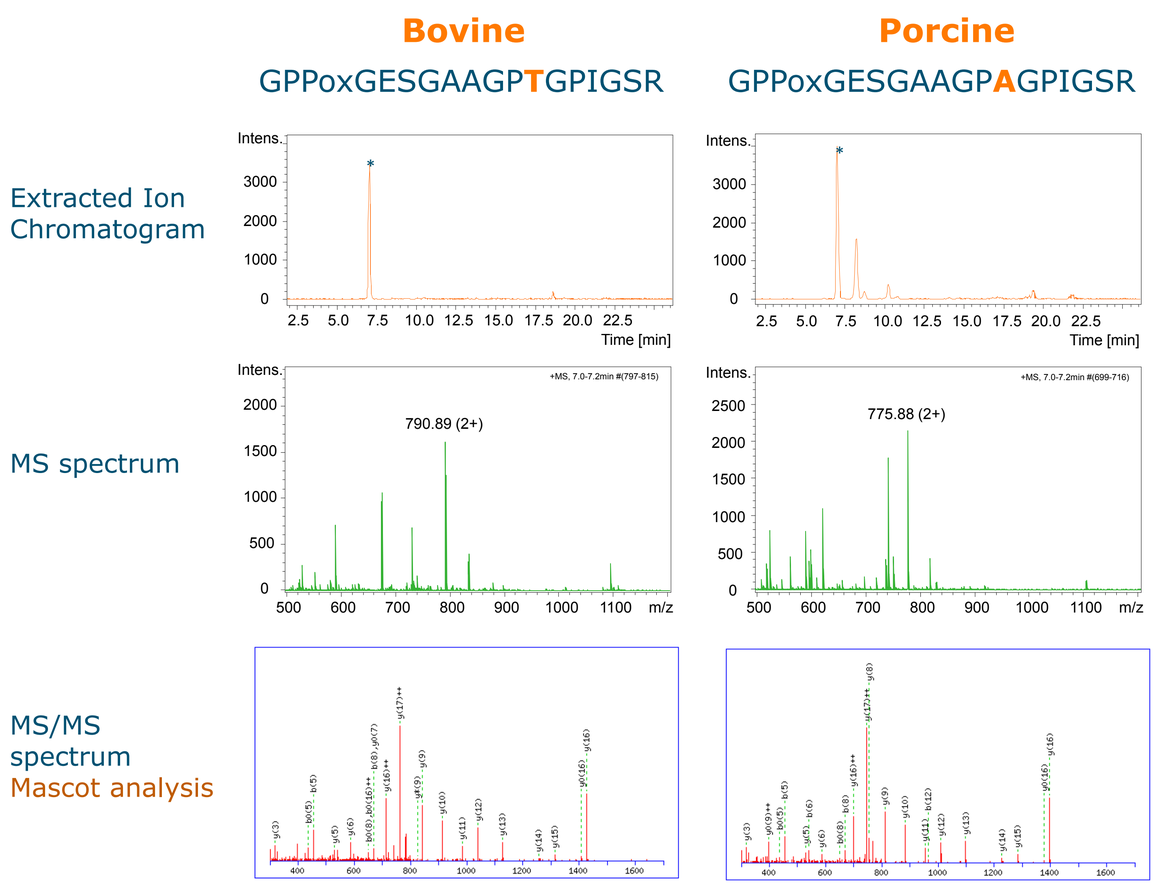
Results

Fifteen yoghurts, declared with and without gelatine, were analysed for gelatine origin.



Gelatine identification based on the **label information** (dark blue) and based on the **current method** (see legend) of 15 yoghurt samples obtained from various retailers in the Netherlands

Differentiation between bovine and porcine gelatine



Conclusions

This study shows the applicability of an UPLC-MS/MS method for the identification of gelatine from porcine or bovine source in dairy products. Validation of the method will be carried out in the future. Further research on the gelatine extraction from different (processed) food products is necessary to allow extension of the method to other gelatine containing (food) products or pharmaceuticals, allowing accurate confirmation of product authenticity.

References

[1] Method was adopted from method developed by FERA, UK.
[2] www.matrixscience.com

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