

**Group** : Organic Chemistry (ORC), Wageningen Food Safety Research (WFSR)  
**Project** : Characterizing bee pollen supplements using fractionation and LC-MS  
**Supervisors** : Laura Righetti (ORC/WFSR), Susannah Heeren (ORC/WFSR/TOX)

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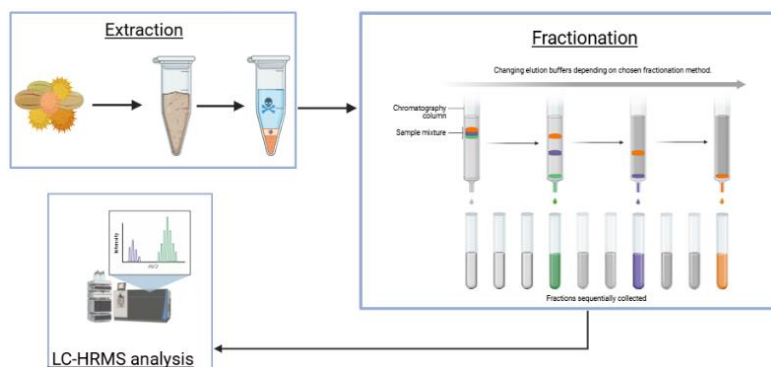
**Background and research interest:** Bee pollen supplements are a type of natural supplements. They are an agglutination of flower pollen collected by the honey bee. The pollen are mixed with the bee's mouth secretion and nectar, to secure safe arrival at the beehive. Once the bee gets to the beehive, the pollen are trapped by pollen traps and collected for human consumption. Over the years this type of supplement has grown in popularity thanks to their nutritional and medical properties. However, just because they are natural, it does not mean they are safe. There have been numerous studies showing that bee pollen are often contaminated with hazardous compounds such as pyrrolizidine alkaloids, mycotoxins, and pesticides. However, these studies often focus on only one class of contaminants and neglect the others. That is why we are focusing on exploring the entire bee pollen exposome and metabolome. A non-targeted High Resolution Mass spectrometry method has been developed to chemically characterize the bee pollen. However, as the bee pollen matrix is very complex, we are in need of a fractionation method. By fractionation we can simplify the extracts, which we can later use in exposure assessments.

### Objectives

The aim of the study is to develop a fractionation method suitable for bee pollen. Moreover, each fraction needs to be characterized using the LC-HRMS method.

### Methodology / what students can learn

After the extraction of the bee pollen, a fractionation method will be developed. Each fraction will then be analyzed with a LC-HRMS method. The obtained data will be processed using open science tools, such as SIRIUS.



### Requirements

We are looking for a MSc student interested in learning advanced analytical techniques, data analysis and gather knowledge about food safety. The project will have a duration of 6 months.

**Contact information:** Laura Righetti ([laura.righetti@wur.nl](mailto:laura.righetti@wur.nl)) and Susannah Heeren ([susannah.heeren@wur.nl](mailto:susannah.heeren@wur.nl))