



Interview - Etienne Maron

Agri-food by-products can have a second life through extraction



In today's agri-food industry, significant amounts of by-products are generated and often discarded as waste. However, it has become increasingly apparent that such by-products possess the potential for repurposing and can indeed have a new life. The EU-funded Model2Bio project is working towards the development of a tool to predict the residual streams in agri-food production and identify the optimal ways to use them. One way to do so is through so called extraction, a method in which Etienne Maron, who is involved in the project, sees great potential. The project manager and his team from Celabor, a scientific and technical service centre that offers support to companies in the field of food technologies, are conducting extraction experiments that will serve as a base for the development of the tool.

What is extraction?

Let me explain this concept with an example that everyone can relate to: coffee. When you make your coffee every morning, pouring hot water over coffee grounds extracts desirable compounds such as caffeine, carbohydrates, lipids, and others from the grounds. Basically, this is extraction, to take out specific molecules from a resource.

You are using extraction in the Model2Bio project to reuse by-products.

How does it work?

The first step is to select the compound of interest that we want to extract from a specific by-product. Then, we perform experiments to determine the best combination of parameters to get the best extract. In this step, temperature, solvent and pressure are some of the parameters studied. After that, post-treatment tests, such as drying, are carried out to obtain a stable extract.



Which agri-food residues are you working on? Why did you select those specifically?

At the beginning of the project, we looked at eight by-products. We did tests on these residual streams and considered the performance of the concentration and yield of the extracted compounds. Based on this, we selected the four most interesting by-products that we are working on: artichoke, grapes, potato peels and brewer spent grain.

What can you convert these agri-food by-products into?

It depends on the residual stream and the industrially valuable compound we focus on. There are a lot of developments nowadays. For example, we can extract proteins from brewer spent grains and polyphenols from artichoke that can be used in cosmetic industry. For potatoes, there is potential to extract a liquid which can be used as bio-pesticide in crop cultivation. This could establish a local and circular process.

Why should agri-food companies convert these residual streams?

Depending on the residual stream, farmers might need to pay for the treatment of their waste. By reusing these by-products, they could avoid this payment. And ideally, they could receive revenue for their waste if there is an opportunity to produce a high-value extract from it. They could contribute to the circular economy. For example, farmers aren't connected to the cosmetic industry, but extracts from their waste can be used in this industry.

Extraction and your experiments on it seem to be an extensive process. Are they relevant enough to the Model2Bio tool to make the effort worthwhile?

These experiments put a number and a cost on the extraction possibilities and their feasibility on the specific residual streams that we're studying in the project. Basically, they give a basis and feed the model. The Model2Bio project is just the start. If this tool works, it needs to be expanded and therefore other residual streams analysed.

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