

first extract the most valuable products and use the residues generated during the first treatment round for additional recycling processes, like fermentation.

Cascading can be performed on grape seeds and peels, among others. During the production of wine, seeds and peels are removed and do not continue in the wine production chain.

They are high in fibres which contain flavonoids, valuable resources for the cosmetics and food supplement sector. Flavonoids can be extracted from fibres after separating these from the pomace in a process called 'slow juicing.' After the separation of the fibres, the remaining juice is still rich in glucose and fructose making it an interesting resource for fermentation. „We can produce erythritol through a fermentation process with Moliniella, a yeast that needs oxygen and sugars to grow. Erythritol is a low-calorie sweetener that is indicated as an alternative product for

people suffering from diabetes or other related metabolic syndromes,” explains Sijtsma. Cascading with its chain structured process revalorises different components of one by-product. The Model2Bio tool will identify such cascading processes.

A programme to help industries reuse production residues

After the performance of the experiments, the tool will use their data together with additional information about environmental, ethical, and economical aspects. Based on all this information the

programme will give the most sustainable and economical solution so companies can make the most out of their by-products. „Most of the residual streams still contain valuable components, and in the future, resources will become increasingly scarce, so we must make the most of it,” explains Malterre from Celabor. „Currently, there are not many alternatives for bio-industries to reuse the by-products that they produce,” points out Sancho from Ceit. Bio-industries could benefit from the tool and make money out of these by-products, turning what is considered waste into a source.

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