

## Fermentative production of a beverage from saffron side streams

beverages, saffron, food biotechnology

### DESCRIPTION OF TECHNOLOGY

Spices are enjoying increasing popularity around the world. In the case of saffron plants, *Crocus sativus* L. in particular, the focus is just on a single part, the stigma, which in its dried form is known as saffron, being one of the most expensive spices in the world.

The remaining parts of the plant (side streams) are either used for agricultural purposes (added to a compost heap to be used as fertilizer) or thrown away, although it is known that the side streams of the flower (stamina and petals) are rich in valuable ingredients such as crocins and polyphenols (Vignolini *et al.* 2008).



Consequently, these flower side streams can serve as a fermentation basis with fungi of the Basidiomycota division and thus experience a valorisation and value-added utilisation.

### APPLICATION EXAMPLE

#### **Fermentation by *Fomitopsis pinicola* (red-belted conk)**

Fragrance: plum, pear, quince, honey, fruity, floral

Flavour: *sour, apple, sweet, tea, astringent*

Colour: peach tea, quince jelly

Samples showed no significant differences in smell, taste or colour after 10/20/30 min pasteurisation.

### AT A GLANCE ...

#### Application Fields

- Beverage production

#### Business

- Beverage producers
- Food biotechnology companies

#### USP

- Use of “waste” parts of saffron plants
- Wide range of flavours and aromas

#### Development Status

- Tested fermentation process on laboratory scale

#### Patent Status

Priority application filed on 02.09.2022 at the European Patent Office.

PCT Application is possible within priority year

## ADVANTAGES OVER THE PRIOR ART

- Use and economic enhancement of spice plant side products (saffron, but also others)
- Wide range of flavours and fragrances, achievable by fermentation

## STATE OF PRODUCT DEVELOPMENT

- Screening of 70 different fungi
- Sensory analysis + sample tastings
- Tested parameters for fermentation with *F. pinicola*
- Reduction of oxalic acid content
- Pasteurisation & carbonisation were performed

## MARKET POTENTIAL

The global saffron market has very good growth dynamics and *Future Market Insights* forecasts the market value to almost double from US\$428 million in 2022 to US\$804.4 million in 2032.

The market for fruit-flavoured beverages is also expected to grow by US\$23.95 billion by 2026, especially in Asia-Pacific, according to *Technavio analysis 2022*.

## COOPERATION OPPORTUNITIES

On behalf of Justus-Liebig-University Giessen, TransMIT GmbH is looking for cooperation partners or licensees worldwide.

### Reference:

Vignolini, Pamela; Heimler, Daniela; Pinelli, Patrizia; Ieri, Francesca; Sciuillo, Arturo; Romani, Annalisa (2008): Characterization of By-products of Saffron (*Crocus sativus* L.) Production. In: Natural Product Communications 3 (12), S. 1959–1962.

## A TECHNOLOGY OF



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