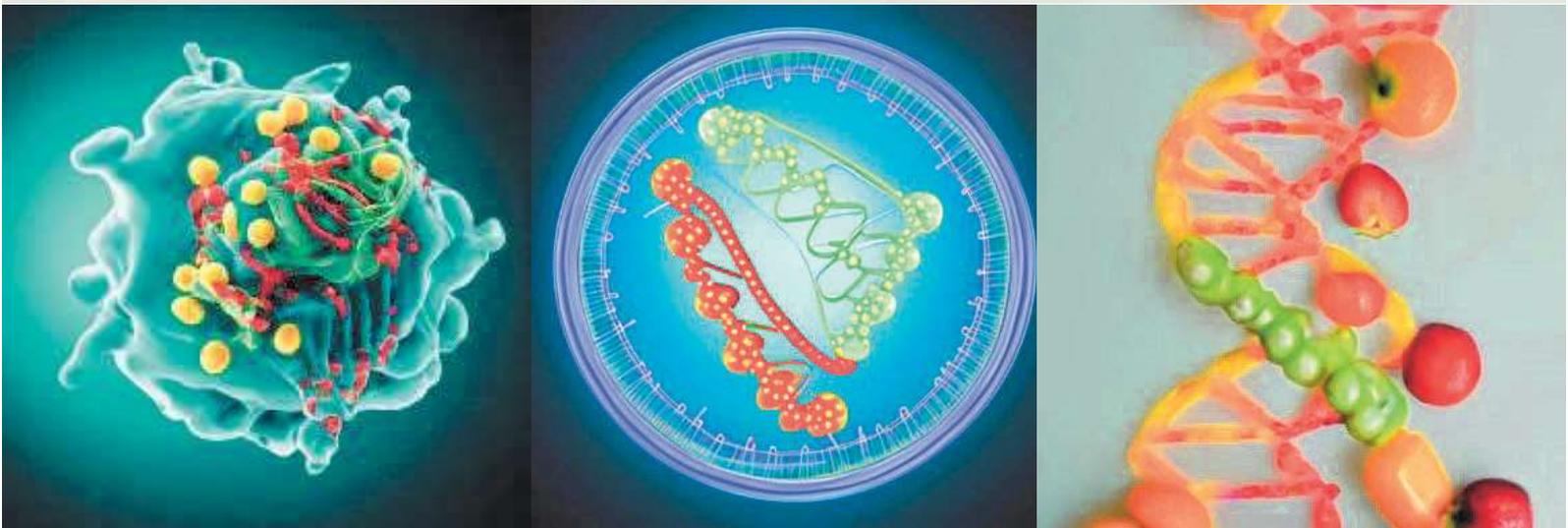




FoodOmics 2024

7th International Conference



*2009-2024, fifteen years on from.
Where are we now, what's next.*

14-16 February, Cesena (Italy)

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ABSTRACT BOOK

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Production of volatile compounds from fermented clementine by-products by yeasts and lactic acid bacteria.

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The circular bioeconomy approach represents an opportunity to address environmental and economic issues in a sustainable and innovative way. In this context, the development of food by-products valorisation strategies based on tailored biotechnological processes perfectly fits with the circular bioeconomy framework. Microbial fermentation by selected GRAS microbial species can improve the functional, qualitative, and sensory properties of the fermented substrate. The aim of this study was to investigate the contribution of different microorganisms (yeasts and lactic acid bacteria) to the production of volatile aroma compounds starting from agro-industrial residues such as the clementine juice processing by-products. More than 185 compounds relevant for the food sector were detected through HS-SPME-GC-MS analysis. The most prevalent substances were the terpenes, including linalool and alpha pinene. It is well-known that terpenoids are linked to citrus fruit peels and their essential oils which are valuable compounds to the food and fragrance industries. Moreover, several aldehydes, alcohols, and esters, which are identified as biomarkers for discriminating among different citrus varieties by affecting their typical odor and sensory properties, were associated with the fermented clementine by-products to different extents in relation to the microbial starter used for the fermentation. These compounds are responsible for flavours which are generally appreciated such as floral, citrus, sweet and minty. In conclusion, metabolites derived from microbial fermentation can improve the sensory profile of by-products thus ensuring their valorisation into flavouring ingredients for the food industry.