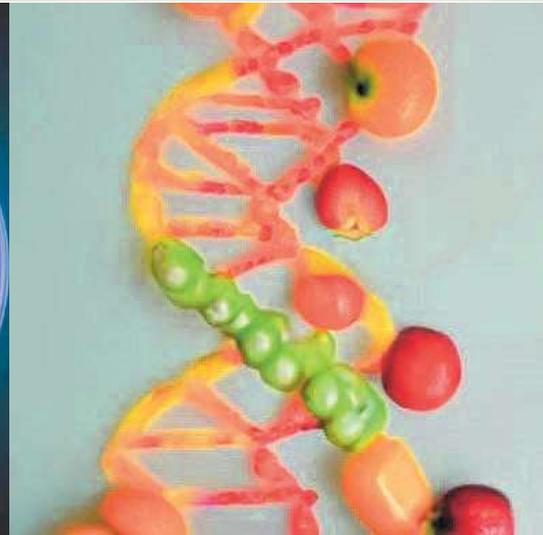
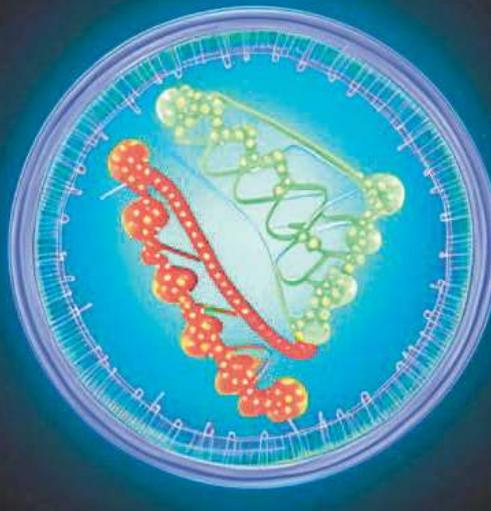
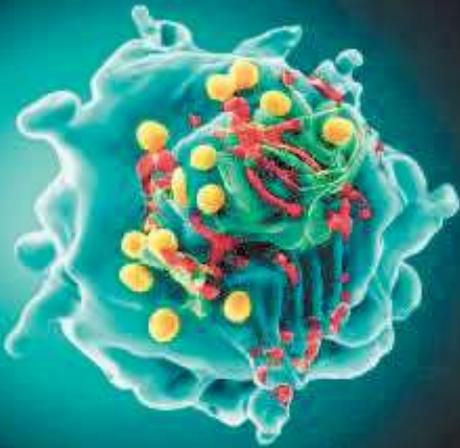




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ABSTRACT BOOK

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Tailored microbial starters to valorise clementine residue into functional ingredients.

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Citrus juice production generates significant residues and wastes with high-value compounds, which can be valued by the food industry rather than being discharged, used for energy production or animal feeding. The overall aim of this study was to set up a tailored biotechnological process, based on a non-thermal pre-treatment and microbial fermentation with GRAS microbial species to produce a functional ingredient from clementine by-products (BPs). Since the chemico-physical features of the citrus BPs can inhibit microbial growth, a preliminary screening of 40 strains of different microbial species among yeasts and lactic acid bacteria (LAB) was carried out for their growth ability and for the impacts on total phenolic content (TPC), antioxidant activity and sensory profile of the fermented BPs. Results showed that some of the tested yeasts grew after 24-48 hours, while others presented a prolonged lag phase and growth was detected only after 5 days (overall mean cell increases of 2-3 log CFU/g). All the LAB were able to adapt and survive to the adverse matrix conditions during the first 3 days of fermentation, with some strains keeping viability up to 6 days. An increase in the antioxidant activity was detected following fermentation with *L. casei* and *L. plantarum*. Almost all the strains increased the TPC values during fermentation, being yeasts more active than lactic acid bacteria with species- and strain-related differences. Aroma profile of the fermented clementine BPs was positively influenced by fermentation being enriched mainly in terpenes and alcohols. Overall, the selection of the microbial species and strains tailored for the specific features of clementine BPs is crucial for the development of

successful fermentation resulting in desired characteristics and enhanced functional properties.