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BIOTECHNOLOGICAL STRATEGIES TO REDUCE SALT AND/OR FAT IN FOCACCIA TYPE-BREAD

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The increased consumption of street foods require to improve their nutritional quality and to reduce the fat and salt intake. Among the Italian street foods the most common one, mainly in the Southern regions, is the *focaccia* , a type of bakery product, prepared with soft and durum wheat flour, water, yeast, fat (olive or seed oil and in some cases lard) and salt. To meet the consumer demand for healthier foods, the biotechnological approach based on the use of lactic acid bacteria (LAB), having several technological properties, has been adopted by the bakery companies. These microorganisms produce several bioactive molecules including taste metabolites, useful in compensating the salt reduction, and exopolysaccharides (EPS), having a functional and technological role in bread manufacturing (Valerio et al., 2017; Zannini et al., 2016). The aim of this study, carried out within the "INNOTIPICO" Project, was to exploit the technological features of some LAB strains (<http://server.ispa.cnr.it/ITEM/Collection/>) isolated from Italian semolina and sourdough, and develop fermentation products enriched in taste molecules or EPS that added to the yeast leavened focaccia allow to reduce the salt or the fat addition, respectively. Furthermore, the concomitant use of minor cereals, legumes or pseudo-cereals has been shown to improve the technological, nutritional, functional and sensorial aspects of baked yeast products (Di Biase et al., 2019). Among the LAB strains studied the *Lactobacillus plantarum* ITM21B was able to produce a fermentation product, based on wheat flour and gluten, containing taste metabolites, mainly organic acids, having a role in the sensorial properties of the final salt reduced (50%) product. The biotechnological protocol was applied at laboratory scale production and the resulting focaccia showed acceptable sensorial properties, a higher content of total free amino acids (TFAA) and organic acids respect to the commercial product. Furthermore, a *Weissella cibaria* strain (C43-11) resulted to be a good EPS producer. Different fermentation product formulations including wheat, amaranth, quinoa flours and/or wheat gluten, were tested and the formulation containing amaranth flour was selected for the highest EPS content. In conclusion, the use of LAB fermentation products as ingredients added to the dough, does not modify the usual industrial process but allows to obtain the same advantages offered by the traditional sourdough fermentation with shorter leavening time and easier management and reproducibility.

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