

**PW361 *Zymomonas mobilis*: an alternative dough leavener for the production of yeast-free baked doughs**

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**Background:** adverse responses to *Saccharomyces cerevisiae* occur in particular in people with Inflammatory Bowel Disease and with Crohn's disease, in which anti-*S. cerevisiae* antibodies directed against the phosphopeptidomannan of the yeast cell wall have been identified. *Zymomonas mobilis*, a Gram-negative bacterium GRAS classified by the FDA, can represent an interesting candidate for producing yeast-free fermented goods.

**Objectives:** as *Z. mobilis* does not utilize maltose present in flour, different strategies were applied to improve its leavening ability in dough: glucose or sucrose addition, or exploitation of the maltose hydrolytic activity of *Lactobacillus sanfranciscensis*.

**Methods:** five *Z. mobilis* and one *L. sanfranciscensis* strains were used in dough leavening trials. Experiments were set up with different dough consistency and inoculum ( $10^7$ - $10^9$  UFC/g), leavening temperature ( $25 - 30 \pm 0.5$  °C) and time (6 to 24 h), with or without sugars (3-5%) and NaCl (1%). Dough leavening properties (e.g., CO<sub>2</sub> production, dough volume increase, lag leavening time and rates) as well as time course of microbial population, sugars consumption and ethanol production were evaluated.

**Results:** the addition of glucose or sucrose as well as the highest leavening temperature increased the gaseous production and retention and consequently the dough development. *L. sanfranciscensis* contribution was fickle: the productivity gain showed positive performance only at high inoculum and short leavening time (3-4 h). NaCl worsened *Z. mobilis* fermentation performance but this behavior seems to be strain-related. Results highlight that developing a dough leavened by *Z. mobilis* and thus suitable for yeast-sensitive people is possible.