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Talk

## Expression of genes related to phenolic-compounds degradation by *Lactobacillus pentosus* and its relevance for table-olive fermentation.



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*Keywords:* Food biotechnology; *Lactobacillus pentosus*; Phenolic compounds degradation

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### ABSTRACT

**Motivation:** *Lactobacillus pentosus* is a lactic acid bacterium of great economic impact in food industry (Abriouel et al., 2011). This is especially true for table olive fermentation, where different strains have been extensively used as starter cultures to improve quality and safety of this product (Ruiz-Barba and Jiménez-Díaz, 2012). The phenolic content of the green olive fruits confers not only a bitter taste but also an inhibitory effect on bacteria, especially lactic acid bacteria (LAB) (Medina et al., 2009). Therefore, the olive's alkali treatment followed by one or more washing steps, which are characteristic of the Spanish-style preparation, are critical for appropriate subsequent lactic acid fermentation. It is clear that the use of LAB starter cultures with increased capabilities to cope with and degrade phenolic compounds present in table olive fermentations would be an advantageous trait. The examination of the genome of an *L. pentosus* strain isolated from Spanish-style green olive fermentation (Maldonado-Barragán et al., 2011) revealed the presence of several potential phenolic-compound-degrading genes as deduced by their DNA and protein sequence homology. The aim of this work is to study the actual expression of these genes in two selected strains of *L. pentosus* from different origins.

**Methods:** The presence of genes related to phenolic-compounds degradation among wild-type strains of *L. pentosus* was carried out by PCR. The gene expression measurements were performed by RT-qPCR using total RNA samples from *L. pentosus* strains grown under phenolic-compounds exposure or incubated in different inhibitory green olive brines. The phenolic compounds degradation activity of *L. pentosus* strains was examined by HPLC analysis.

**Results:** *Lactobacillus pentosus* has the ability to degrade different phenolic compounds. The presence of phenolic compounds in minimal medium or incubation in green olive brine, induce the transcription of specific *L. pentosus* genes related to the degradation of these compounds.

**Conclusions:** The ability to degrade phenolic compounds provides to *L. pentosus* strains a competitive advantage during table-olive fermentation, and it is a biotechnological target to improve the result of this process.

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