UNIVERSITÀ DEGLI STUDI DI UDINE
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Dott. SABRINA VOCE
Prof. PIERGIORGIO COMUZZO
Email : sabrina.voce@uniud.it

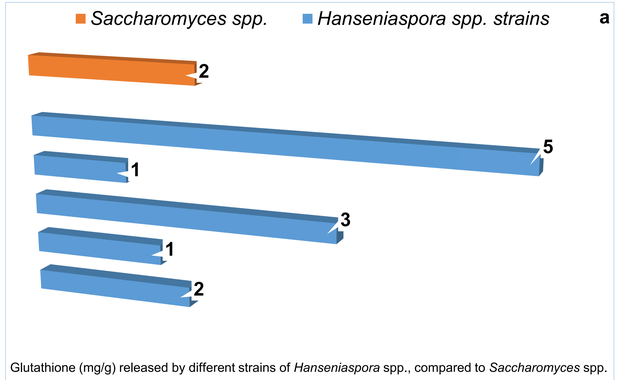
CORSO DI DOTTORATO DI RICERCA IN:
ALIMENTI E SALUTE UMANA

Investigation about new concepts of yeast derivatives for winemaking with enhanced antioxidant properties and polysaccharides content

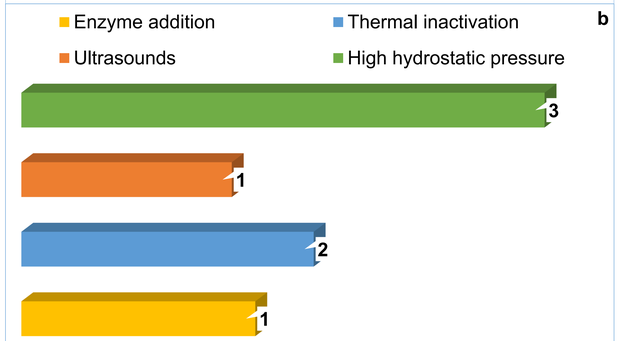
Yeast derivatives with high content of antioxidant compounds and polysaccharides starting from non-*Saccharomyces* strains and by applying non-thermal technologies as innovative production process

Keywords

non-*Saccharomyces*; antioxidants, polysaccharides, yeast derivatives, non-thermal technologies, aging



Glutathione (mg/g) released by different strains of *Hanseniaspora* spp., compared to *Saccharomyces* spp.



Glutathione (mg/g) in yeast derivatives of *Saccharomyces* spp. obtained by different treatments

AIMS

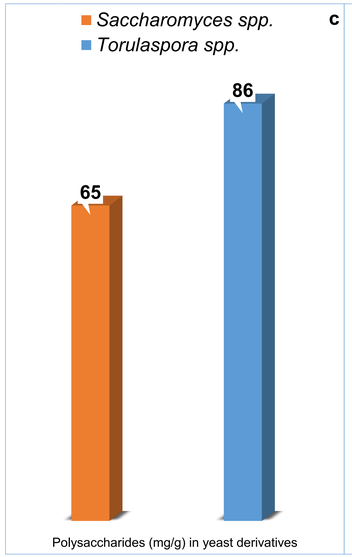
Production of innovative yeast derivatives for winemaking use, with better chemical composition, high antioxidant properties and low odor impact, starting from non-*Saccharomyces* strains, by using non-thermal approach.

Evaluation of different strains and processing technologies (emerging *vs* traditional methods) on yeast derivatives composition and on wine quality and stability during aging

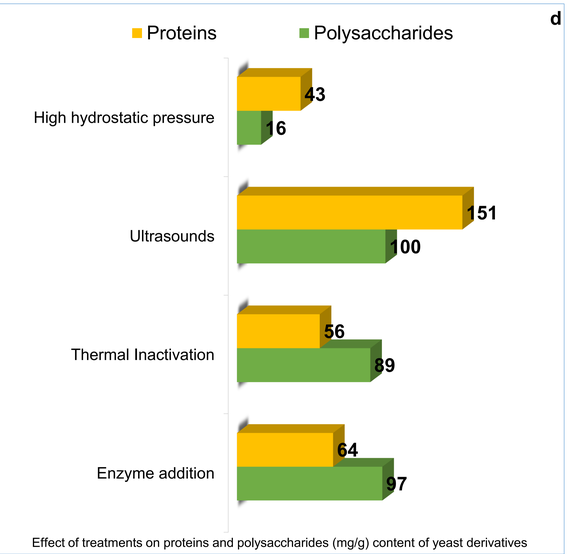
RESULTS

Both strains and technology affected the chemical composition of yeast derivatives.

Hanseniaspora spp. (**a**) and high-pressure treatment (**b**) released considerable amount of glutathione, whereas high content of soluble molecules, polysaccharides and proteins, were found in derivatives obtained by *Torulaspora* spp. (**c**) or by ultrasounds (**d**). During aging, the addition of yeast derivatives determined a good protective effect against oxidation, comparable to sulfur dioxide; the volatile profile was more complex in wines added with derivatives obtained by ultrasound or with lees obtained by *Hanseniaspora* spp. treated by high-pressure. In general, ultrasounds gave results similar to enzyme addition, whereas high-pressure was comparable to thermal inactivation.



Polysaccharides (mg/g) in yeast derivatives



Effect of treatments on proteins and polysaccharides (mg/g) content of yeast derivatives

APPLICATIONS

Use of *non-Saccharomyces* strains for producing yeast derivatives, with high content of antioxidants and polysaccharides.

Emerging technologies as low-cost and low-energy alternatives to traditional methods for producing yeast derivatives.

In relation to composition, by combining strain and appropriate technology, different products with different applications may be obtained, *i.e.*, fermentation and wine quality enhancers.