

# Bioprotection of Nocellara del Belice table olives: the effect of *Candida boidinii* LC1 and *Candida norvegica* OC10 in different thermal storage conditions.

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## Background

Olives of the Nocellara del Belice variety, processed using the Castelvetro method, are highly appreciated for their sensory characteristics. However, their limited shelf life requires refrigerated storage to prevent the growth of spoilage and pathogenic microorganisms (Alfonzo et al., 2024). This study investigates the bioprotective potential of two selected yeast strains, *Candida boidinii* LC1 and *Candida norvegica* OC10, to enhance product safety and quality.

## Methods

Three experimental batches were produced using the Castelvetro method and inoculated with selected yeast strains. Samples were stored for 180 days under three different temperature conditions (Fig 1). Microbial populations, physicochemical parameters and sensory attributes were analysed.

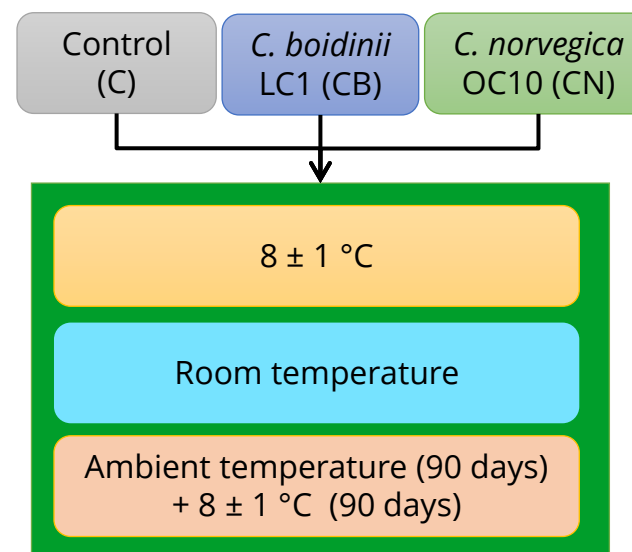


Fig 1. Experimental plan

## Results

Yeast inoculation significantly reduced the presence of undesirable microorganisms, particularly under refrigerated and combined storage conditions. Inoculated samples also exhibited improved retention of green colour and enhanced pulp hardness (Tab 1). Sensory evaluation confirmed these improvements, with *C. norvegica* OC10 demonstrating the most favorable impact on sensory properties.

## Conclusions

The study confirmed the bioprotective efficacy of yeast inoculation, particularly with *C. norvegica* OC10. Furthermore, reducing refrigerated storage from 180 to 90 days, when combined with yeast treatment, resulted in a 50% reduction in energy consumption without compromising product quality.

Treatment	Drupe colour			Pulp hardness (kg/cm <sup>2</sup> )
	L*	a*	b*	
C-8	40.13±1.51 d	-6.84±0.98 bcd	25.58±0.79 d	18.35 ± 0.25 c
CB-8	45.36±1.20 c	-8.21±0.43 cd	29.54±1.03 cd	22.86 ± 0.48 a
CN-8	46.55±1.17 c	-8.77±0.78 d	29.69±1.70 cd	23.12 ± 0.50 a
C-RT	52.41±0.72 a	-4.70±0.16 ab	30.61±1.27 bc	17.79 ± 0.12 c
CB-RT	51.05±1.38 ab	-5.05±0.19 ab	33.25±1.69 abc	19.08 ± 0.41 c
CN-RT	53.08±1.06 a	-5.20±0.55 ab	33.38±1.59 abc	21.44 ± 0.12 b
C-RT/8	48.01±1.31 bc	-4.26±1.14 a	31.84±1.06 abc	18.21 ± 0.59 c
CB-RT/8	52.28±0.66 ab	-7.26±0.95 bc	35.57±1.01 ab	22.13 ± 0.62 ab
CN-RT/8	51.86±0.89 ab	-6.44±0.43 bc	35.26±1.30 a	22.25 ± 0.80 ab
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Tab 1. Drupe color and pulp hardness of olives after six months of storage

Alfonzo, A., Alongi, D., Prestianni, R., Pirrone, A., Naselli, V., Viola, E., De Pasquale, C., La Croce, F., Gaglio, R., Settanni, L., Francesca, N., & Moschetti, G. (2024). Enhancing the quality and safety of Nocellara del Belice green table olives produced using the Castelvetro method. *Food Microbiology*, 120, 104477. <https://doi.org/10.1016/j.fm.2024.104477>