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Book of Abstract and  
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SESSION 5: Agro-industrial uses of CAM crops

## IMPROVEMENT OF OXIDATIVE STRESS TOLERANCE IN *SACCHAROMYCES CEREVISIAE* BY FERMENTED CACTUS PEAR JUICE SUPPLEMENTATION

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Consumption of cactus pears from *Opuntia ficus-indica* is strongly recommended due their health-promoting features. However, long-term storage represents the main drawback to the commercialization of this fruit. The development of a fermented cactus pear juice (F-CPJ) using autochthonous lactic acid bacteria constitutes an important biotechnology for the exploit of this fruit. The aim of this study was to evaluate the effect of F-CPJ with autochthonous *Lactobacillus plantarum* S-811 on oxidative stress tolerance of *Saccharomyces cerevisiae*. *S. cerevisiae* is a fast-growing and easy to grow eukaryotic organism and is an excellent model for evaluating in a living organism the protective effect against oxidative stress. To evaluate the antioxidant response induced by CPJ and F-CPJ, cultures of *S. cerevisiae* were incubated with the juices (amounts equivalent to 50, 250 and 500 mg/L of phenolics) during 18 h at 28 °C. Cells were then exposed to sub-lethal oxidative stress, using 0.5 or 4 mM H<sub>2</sub>O<sub>2</sub>. After stress treatments, cells were cultured in YPD medium and incubated for 18 h at 28 °C. To evaluate the oxidant effect in each culture, growth-ratio curves (GRC) and effect curves (EC) were constructed as follows: RC = quotient between the growth curve (GC) of the culture exposed to oxidant and the GC of the non-exposed culture; EC = GRC for the culture pre-incubated with the juice was divided by the GRC for the culture pre-incubated without juice. Against a final concentration of 0.5 mM H<sub>2</sub>O<sub>2</sub> there was not observed a significant protective effect by any of the evaluated juices. However, against 4 mM H<sub>2</sub>O<sub>2</sub>, CPJ and F-CPJ showed a significant protective effect, that was much higher with the F-CPJ (up to 15 times protection) than CPJ (up to 4 times protection). These results suggest that F-CPJ with *L. plantarum* S-811 could be a suitable choice for the development of a CPJ with improved functional properties.

Keywords: Oxidative stress, *Lactobacillus plantarum* S-811, *Saccharomyces cerevisiae*.  
*S. cerevisiae*

