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Editor's Note

The Third International Congress on Bee Sciences was successfully held online. We are delighted to have offered this event free of charge. It was an honor to bring together experts from various fields of bee sciences. This Congress allowed to exchange of innovative ideas and fostering the development of new research and collaborative projects. With 44 invited speakers representing 30 countries and a scientific committee composed of nearly 300 distinguished scientists from over 65 countries, the congress truly reflected global participation. We extend our heartfelt thanks to everyone who contributed and supported the event. We look forward to seeing you at our next congress.

Warm regards from Turkey!

Assoc. Prof. Dr. Ulaş ACARÖZ

Poster Presentation

Feeding *Apis mellifera* Larvae With *Saccharomyces cerevisiae* From The Brewing Industry Improves Their Resistance To *Paenibacillus larvae* And Their Primary Antioxidant Enzymatic Activity

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Abstract:
The spore-producing bacterium, *Paenibacillus larvae*, causes American foulbrood (AFB) in the brood of *Apis mellifera* bees and has been associated with their oxidative stress. It ranks among the deadliest bacterial pathogens that affect bee colonies. It has been observed that using beneficial microorganisms as a nutritional supplement can mitigate the impacts of stress by enhancing the immune and antioxidant systems of individuals. In recent years, Argentina has increased the production of craft beer, which generates a large amount of residual *Saccharomyces cerevisiae* yeast. The most commonly used yeasts in the production of ALE beer are S05. The aim of this study was to evaluate the effect of supplementing bee larvae with *S. cerevisiae* and compare its effect between healthy larvae and those inoculated with *P. larvae* spores in terms of infection and antioxidant capacity. For this, groups of larvae were fed with four different diets: control (Yeast Extract, Glucose, Fructose, Royal Jelly and Water), SD (control with 10^5 cells/ml of yeast), ID (control with the median lethal dose of *P. larvae)* and SDI (control plus 10^5 cells/ml of yeast and the median lethal dose of *P. larvae).*The larvae supplemented with yeast showed improved survival compared to the controls. The increasing was from 5.01 to 5.46 days for *P. larvae* inoculated larvae fed without and with S05, respectively. Furthermore, the activity of the primary antioxidant enzymes catalase (CAT) and superoxide dismutase (SOD) was estimated in larvae of each group and expressed as units per µg of total protein. Larvae of SD group showed an augment in CAT and SOD activity compared to larvae fed with control diet (CAT= from 1.63±0.97 to 1.78±0.99 not-statistically significant; SOD= from 0.26±0.11 to 0.40±0.17 statistically significant). In the cases of ID and SDI groups, CAT activity of SDI (3.06±2.22) increased statistically significant respect to larvae of ID (1.56±1.16) and SOD activity remained without changes (from 0.21±0.17 for SDI to 0.21±0.20 for ID). Our results demonstrate that feeding larvae with *S. cerevisiae* yeast, a by-product from the brewing industry, can increase larval resistance to AFB pathology by enhancing their oxidative state, thereby contributing to the circular economy.

Keywords: *Apis mellifera* larvae; *Saccharomyces cerevisiae*, *Paenibacillus larvae*; Antioxidant enzymes; circular economy.

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