

EFFECTS OF STORAGE TIME AND FREEZE-DRYING ON THE ACTIVITY OF ANTIOXIDANT ENZYMES IN SUGARCANE LEAVES

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The analysis of the antioxidant enzymatic system in leaves is usually done in samples frozen and stored in ultrafreezer. The freeze-drying technique could be an alternative for preserving samples for long time, but the influence of this procedure on antioxidant enzymes is not known. This study aimed to evaluate the influence of storage time and freeze-drying on the activity of antioxidant enzymes of sugarcane leaves. Samples were collected, immersed in liquid nitrogen and stored at -80°C. The activities of superoxide dismutase (SOD), catalase (CAT), total peroxidase (POX), ascorbate peroxidase (APX) and the protein content were determined on the sampling day and after 27 and 53 days of storage. The activity of antioxidant enzymes as well as the leaf protein concentration remained unchanged after 53 days of storage. However, significant decreases in the activity of all enzymes and in protein content were caused by the freeze-drying technique. Our data revealed that (i) sugarcane leaves could be stored in ultrafreezer for at least two months without losing enzymatic activity or protein content and (ii) the freeze-drying technique should not be used to preserve samples for further analysis of antioxidant enzymes.

Keywords: *Saccharum* spp, antioxidant metabolism, drying, low temperature

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