

Copper Toxic Stress on *Aloe Barbadensis* and its Antioxidant Response

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ABSTRACT

Toxic levels of copper (Cu) can cause delirious effects such as protein denaturation and oxidative stress resulting in membrane damage, metabolic damage, and enzymatic activity alteration. Plants respond to heavy metal tolerance through alteration of their enzymatic antioxidant activity which acts as a toxicity tolerance mechanism. The aims of this study was to investigate the relationship between *Aloe barbadensis* enzymatic antioxidants (SOD, CAT, APX and GPX) in specific activity (nmol/mg/g) and their response to different concentrations of Cu (1ppm, 3ppm, 5ppm). Plants were treated with different concentrations of Cu (1ppm, 3ppm, 5ppm) for a period of 21 days. Activity of the antioxidant enzymes were determined after 21 days. SOD exhibited changes in activity in response to increased Cu concentration and showed significance higher ($P < 0.05$) at 3ppm and 5ppm Cu when compared to 1ppm. CAT exhibited changes in activity as Cu concentration increased and showed no significance within three levels of Cu. APX exhibited changes in activity as Cu concentration increased and showed significantly higher ($P < 0.05$) at 1ppm when compared to 3ppm and 5ppm. GPX exhibited changes in activity as Cu concentration increased and showed no significance within three levels of Cu. In conclusion, the enzymatic antioxidant exhibited relationship in activity. SOD antioxidant was found to be the most effective in scavenging the reactive oxygen species as it increases during copper stress and shows consistency in activity.