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Effect of Norflurazon on Responses of Superoxide Dismutase and Catalase in a Standard Maize Inbred Line and Superoxide Dismutase Mutant

Sunyo JUNG¹⁾

1) Scigen Harvest Research Center, Business Incubator, Seoul National University

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We compared the responses of superoxide dismutase (SOD) and catalase (CAT) to a herbicide norflurazon (NF)-induced oxidative stress in leaves and mesocotyls of a standard maize (*Zea mays*) inbred line (W64A) to those of a SOD mutant (A130-1) having a mutation in *Sod1*. The changes in activities of SOD and CAT with NF treatment did not differ between W64A and A130-1. The relative transcript levels of *Sod1* and *Cat1* increased greatly in response to NF in leaves and mesocotyls of the two maize lines. In leaf and mesocotyl tissues, the *Sod3* transcript increased only at a 33 μ M NF in W64A, whereas *Sod3* increased at 33 μ M and 100 μ M in A130-1. The *Sod4A* transcript increased only in mesocotyls of NF-treated A130-1, but the total *Sod4A* transcript level was much higher in W64A than in A130-1. *Cat2* increased in the leaves of NF-treated W64A but decreased significantly in the leaves of A130-1. In mesocotyls, the *Cat2* transcript increased only in A130-1 upon NF treatment. The maize variant with a mutation in *Sod1* demonstrated differences in the induction of *Sod* and *Cat* transcripts from the standard inbred line W64A in response to NF-induced oxidative stress.

Keywords:

catalase, maize (*Zea mays*), norflurazon, oxidative stress, superoxide dismutase

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