

Effect of Norflurazon on Resorcinolic Lipid Metabolism in Rye Seedlings

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Norflurazon is a selective pyridazinone herbicide excessively employed in the control of many annual grasses and broad-leaved weeds. This chemical causes plant bleaching due to the inhibition of the carotenoid pigment biogenesis as well as induces irreparable changes to chloroplasts, which are considered the organelles where the biosynthesis of resorcinolic lipids takes place. Resorcinolic lipids, a group of phenolic compounds, constitute not only an essential part of the plant antifungal defense system, but also are an important component of the human cereal diet. The aim of this study was to investigate the effect of norflurazon on the biosynthesis of resorcinolic lipids in 5-day-old rye plants (*Secale cereale* L.) that were grown at three different temperatures under light or dark conditions. At all tested temperatures, norflurazon decreased the fresh biomass of light-grown rye seedlings and increased the weight of plants grown in darkness. Compared with respective controls, this herbicide caused an increase in total content of alkylresorcinols in both green and etiolated plants with the exception of dark-grown norflurazon-treated rye at 29 °C. The general level of saturated homologues was markedly decreased by norflurazon in all etiolated plants and in light-grown seedlings at 15 °C. Independent of thermal and light conditions, in all norflurazon-treated samples two alkylresorcinol derivatives predominated: 1,3-dihydroxy-5-*n*-heptadecylbenzene and 1,3-dihydroxy-5-*n*-nonadecylbenzene. Thus, our results suggest that norflurazon affected the metabolism of alkylresorcinols in rye seedlings and its action was dependent on external stimuli.

Key words: 5-*n*-Alkylresorcinols, Herbicide, Norflurazon