Phytogrowth Activity of 3-(3-Chlorobenzyl)-5-arylidenefuran-2(5H)-ones


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Nine new 3-(3-chlorobenzyl)-5-arylidenefuran-2(5H)-ones were prepared in 20–87% yields by reaction of 3-(3-chlorobenzyl)furan-2(5H)-one with pertinent aldehydes. All compounds were fully characterized by IR and NMR spectroscopy as well as MS spectrometry. The phytotoxic properties of the synthesized lactones were evaluated as the ability to interfere with the growth of Sorghum bicolor and Cucumis sativus seedlings at 10 ppm and 100 ppm. Lactone 12, at 10 ppm, was the most active and selective, inhibiting the S. bicolor and C. sativus root growth by 70.7% and 10.7 %, respectively. At 10 ppm, lactone 14 caused the larger effect on the inhibition (41.9 %) of C. sativus. In general, the results indicate the influence of the benzylidene ring substitution on the phytotoxic activity.

Key words: Nostoclides, Herbicides, Natural Products, Cyanobacterin, Phytotoxicity