Allelopathic effect of hydroxamic acids from cereals on Avena sativa and A. Fatua

Perez, Francisco J.

2,4-Dihydroxy-7-methoxy- 1,4-benzoxazin-3-one (DIMBOA), the main hydroxamic acid of wheat, and its decomposition product 6-methoxy-benzoxazolin-2-one (MBOA), inhibited 50% root growth of wild oat, Avena fatua at concentrations of 0.7 and 0.5 mM respectively. 6-Methoxy-benzoxazolin-2-one also inhibited seed germination of A. fatua at all concentration tested. It stimulated root growth in A. sativa at concentrations below ca 1.5 mM and inhibited it at higher concentration. Pulse experiments with DIMBOA indicated that it decomposed to MBOA in A. fatua seeds within a period of 48 hr. Uptake by A. fatua seeds of MBOA, DIMBOA and water showed similar kinetic patterns. However MBOA was taken up preferentially to DIMBOA. The MBOA uptake depends on the after-ripening of the seed. The potential exploitation of hydroxamic acids from wheat as allelochemicals in the control of A. fatua is discussed. © 1990.