

Hydroxamic acid glucosides in honeydew of aphids feeding on wheat

Givovich, A.

Morse, S.

Cerda, H.

Niemeyer, H. M.

Wratten, S. D.

Edwards, P. J.

DIMBOA glucoside (2-O-/gb-D-glucopyranosyl-4-hydroxy-7-meth-oxy-1,4-benzoxazin-3-one), the main hydroxamic acid (Hx) in intact wheat plants, was detected in the honey dew of *Rhopalosiphum padi* feeding on seedlings of six wheat cultivars that differed in their concentration of Hx, suggesting that the chemical circulates in the phloem. Neither the aglucone (DIMBOA) nor its main breakdown product were found in any of the honeydew samples. Honey dew production by aphids caged on seedlings of the wheat cultivars and DIMBOA glucoside concentrations in the honeydew followed biphasic curves when plotted against Hx concentration, suggesting passive ingestion of the chemical from the phloem at low Hx concentrations and limited ingestion due to feeding deterrence by Hx in mesophyll cells at high Hx concentrations. The presence of plant toxins such as Hx glucosides in the phloem sap, the main ingesta of aphids, and in the mesophyll cells, has major implications for plant defense, through a feeding