

Accumulation of hydroxamic acids during wheat germination

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Hydroxamic acids, quantified by HPLC, varied in concentration between three cultivars of wheat. Seeds, roots, leaves and the entire plants were analysed separately. No hydroxamic acids were present in seeds throughout the 7 days of germination studied. Leaves accumulated relatively high concentrations of 2,4-dihydroxy-7-methoxy-1,4-benzoxazin-3-one (DIMBOA) and lower concentrations of its demethoxylated analogue (DIBOA). Higher concentrations of DIBOA were recorded in roots than in leaves of two of the cultivars. Maximal concentrations of DIBOA in the entire plant occurred prior to those of DIMBOA. Although the concentrations of the two hydroxamic acids decreased in all parts of the plant at the latter stages of germination, the absolute quantity of these compounds remained stable, indicating a growth dilution effect. The results show that formation of hydroxamic acids is initiated in the early stages of germination and support the idea that DIBOA is a precursor of DIMBOA. In view of t