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***Brassica italica* Grown under Water Stress — Plant Response Affected by Phloem Feeding Aphids**

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Abstract

Water stress alters the chemical composition of plants, which can influence the plant tolerance to insect herbivory. Glucosinolates (GS) are the main secondary metabolites in brassicaceous plants that play an important role in plant defense and plant-insect communication. GS biosynthesis in plants and their accumulation is influenced by biotic and abiotic stressors of the environment. In the present study, the GS levels in broccoli plants, *Brassica italica*, grown under different water status conditions of soil, well-watered, drought and water-logged, was determined. Also GS content of plants was determined after 7 days feeding of two aphid species, the specialist *Brevicoryne brassicae* (L.) and the generalist *Myzus persicae* (Sulzer). HPLC analysis revealed that GS levels were significantly induced after feeding of *B. brassicae* on *B. italica* plants grown for two weeks under the various water status conditions. No significant differences could be found between GS induction in the three treatments. On the other hand, the induction of GS after *M. persicae* feeding greatly depended on water stress levels. GS content in well-watered plants increased more than in plants grown under drought conditions. *M. persicae* feeding did not increase GS levels when plants were grown under water-logged conditions. The aliphatic GS was increased to some extent in *B. italica* due to the feeding of both *M. persicae* and *B. brassicae* under different water status conditions of soil but the induced level was not statistically significant. Variation in GS levels was observed mainly due to the induction of indolyl GS due to aphid herbivory.

Keywords: *Brevicoryne brassicae*, drought, glucosinolates, *Myzus persicae*, water logged