

Assessment of Phytotoxicity of Parthenin

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Z. Naturforsch. **62c**, 367–372 (2007); received March 23/December 15, 2006

Phytotoxicity of parthenin, a sesquiterpene lactone, was evaluated against four weedy species (*Amaranthus viridis*, *Cassia occidentalis*, *Echinochloa crus-galli*, and *Phalaris minor*) through a series of experiments conducted under laboratory or greenhouse conditions to assess its herbicidal potential. Under laboratory conditions, parthenin (0.5–2 mM) severely reduced seedling growth (root and shoot) and dry weight of test weeds. However, the effect was greater on root growth. Parthenin (1 mM) suppressed the mitotic activity in the onion root tip cells that could possibly be responsible for the reduction in seedling growth. Both pre- and post-emergent application of parthenin caused a significant loss of chlorophyll pigments and affected photosynthesis. Parthenin (≥ 1 mM) caused an excessive electrolyte leakage in the plant tissues which was light-dependent. The root inhibition was associated with swelling and blackening of the root tip, shriveling and damage to the epidermal tissue and non-formation of root hairs. The study concludes that parthenin possesses weed-suppressing potential (both pre- and post-).

Key words: Root Growth Inhibition, Mitotic Activity, Weed Suppressing Ability