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## Bioassay-Directed Isolation and Identification of Phytotoxic Terpenoids from Horseweed (*Conyza Canadensis*)

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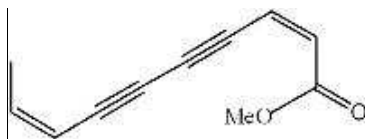
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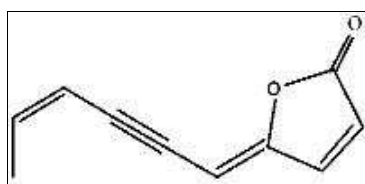
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Horseweed [*Conyza canadensis* (L.) Cronquist, syn. *Erigeron canadensis* L.], Asteraceae, is a common weed with known allelopathic effects but few studies on the isolation and identification of the phytotoxic compounds have been reported [1]. *C. canadensis* infests orchards, vineyards, field crops such as corn, soybean and cotton, particularly in herbicide-resistant crops where conservation tillage or no-till systems are used. The objective of this study was to identify the phytotoxic compounds present by systematically performing bioassay-directed isolation and subsequent identification of the bioactive constituents according to Dayan *et al.* [2]. No significant phytotoxic activity against *Lactuca sativa* or *Agrostis stolonifera* was detected in methanol, or water extracts when tested at 1.0mg·mL<sup>-1</sup>; however, the dichloromethane extract was active. Further fractionation using liquid-liquid partitioning with hexane, chloroform, ethyl acetate and water was performed with the DCM extract. The most active extract (chloroform) was subjected to preparative HPLC and the fractions were tested again. The active compounds were isolated and identified by GC-MS and <sup>1</sup>H- and <sup>13</sup>C-NMR. The isolated compounds (Figure 1) were identified as (2Z,8Z)-matricaria acid methyl ester, (4Z,8Z)-matricarialactone and (4Z)-lachnophyllumlactone. Compound 3 shows similar activity as compound 2.



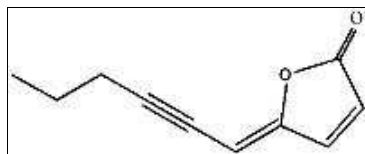
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1



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2



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**3Fig.1:** Isolated compounds: 1) (2Z,8Z)-matricaria acid methyl ester, 2) (4Z,8Z)-matricarialactone and 3) (4Z)-lachnophyllumlactone.

**Acknowledgements:** The authors thank Solomon Green III, Robert Johnson, and Amber Callahan for technical assistance at NPURU, USDA-ARS.

**References:** [1] Gao XX, Li M, et al. (2009) Allelopath J 23: 287-296. [2] Dayan FE, Romagni JG, et al. (2000) J Chem Ecol 26: 2079-2094.

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