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Assessment of Four Solvents for Extraction and Analysis of the Chemical Composition of Sansevieria Extrafoliar Nectar Drops by Gas Chromatography-mass Spectrometry

Hope L. Juntunen
Dakota State University

Patrick Videau
Dakota State University

Donna Hazelwood
Dakota State University

Michael Gaylor
Dakota State University, michael.gaylor@dsu.edu

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ASSESSMENT OF FOUR SOLVENTS FOR EXTRACTION AND ANALYSIS OF THE CHEMICAL COMPOSITION OF *SANSEVIERIA* EXTRAFOLIAR NECTAR DROPS BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY

H. L. Juntunen, P. Videau, D. Hazelwood, and M. O. Gaylor*

College of Arts and Sciences

Dakota State University

Madison, SD 50742

*Corresponding author email: michael.gaylor@dsu.edu

ABSTRACT

In the latter part of the 20th century, much effort was devoted to elucidating the chemical constituents of floral and extrafloral nectar secretions, with the primary aim of understanding their ecological roles, especially in regards to attracting pollinators. But, nearly all these studies focused on determining sugar and amino acid constituents. Only a few studies have reported more comprehensive assessments of the organic chemical constituents of plants, with none of those reporting such efforts for *Sansevieria* taxa (common houseplants known to purify air by bioaccumulating pollutants). To address this knowledge gap, we evaluated the efficacy of four organic solvents with distinct polarities (dichloromethane (DCM), ethyl acetate, toluene and hexane) to extract the most diverse suite of organic compounds from extrafloral nectar drops ($n = 12$) secreted by mother-in-law's-tongue plant (*Sansevieria* spp.). Each solvent exhibited unique extraction efficiencies, with DCM extracting the greatest number of unique compounds (141), followed by hexane (113), ethyl acetate (58) and toluene (43). Compound class distributions varied with solvent type, with aliphatic hydrocarbons dominating in all but the ethyl acetate extracts. We detected 105 unique aliphatic compounds in the DCM extracts, followed by 69, 28 and 9 in the hexane, toluene and ethyl acetate extracts, respectively. Alcohols predominated in the ethyl acetate extracts. We are aware of no published studies reporting such analytical determinations of the organic compound inventories of *Sansevieria* extrafloral nectars. Validation of this methodology provides the impetus to study various other plant secretions of known and unknown utility.