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Mullein extract antibiosis confirms ethnobotanical use for respiratory infections

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Native to Europe and Asia, Common Mullein (*Verbascusm thapsus L.*) was introduced into North America in the 1700's. Oil extracts of mullein flowers were used by the Cherokee to treat earaches; and are used similarly by herbalists today. Mullein leaves have been smoked and mullein tea is consumed to treat respiratory issues by other Amerindians. Antibiosis is associated with several mullein constituents. Mullein flower and leaf samples were collected from 13 sites in the midwest and central Atlantic states. Flowers were transported in 91% isopropanol and air dried upon arrival in the lab; leaves were air dried. Sample voucher specimens were collected. Health of plants, insect type/degree of infestation, and topography of land were noted. Flowers and leaves were extracted in pH 4 phosphate buffer for 1 week and filtered. Buffer was evaporated, and samples reconstituted at 1 gm plant material/ml buffer. 100 µl aliquots were applied to 6 mm Whatman #3 dots and Kirby Bauer analysis performed on the following bacterial lawns: S*taphylococcus epidermidis, Staphylococcus aureus, Streptococcus pneumoniae, Streptococcus mutans, Bacillus subtilis, Escherichia coli, and Klebsiella pneumoniae*. Notably, the most sensitive species to mullein were respiratory pathogens, validating ethnobotanic use in all geographic locations. In both flowers and leaves, zones of inhibition were significantly ($p=0.0019$) larger against *S. pneumoniae* than against all species, and greater against *Klebsiella pneumoniae* than non-respiratory gram negative species. Furthermore, antibiosis was greatest late in the season when plants were in full flower. LC analysis of extracts is ongoing as is soil analysis.

Biography

Vicki A Motz received her PhD from Boston University in 1986 and has been teaching Physiology and various aspects of Herbalism for over 30 years. Linda Mull Young, received her PhD from OSU. She is a plant Physiologist, with an expertise in Microbiology who has been teaching for 28 years. They have generated 7 peer reviewed papers and 4 presentations since founding the ONU Ethnobotany Collaborative in 2009 with Christopher Bowers and David Kinder; to direct undergraduate student research with primary focus on validating ethnobotanical uses. The collaborative has mentored 26 student presentations at state, national and international levels.

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