Identification of Volatile Compounds in Different Parts of the Brinjal Plant (*Solanum melongena*)

Mohammed Siddeek Fathima Nusra[1], Priyani Ashoka Paranagama[2], Lalithanjalie Deepika Amarasinghe[3], Dinusha Nishani Udukala[4]

Plants synthesize and emit a large variety of volatile compounds, which produce a wide range of behavioral responses in insects. In some plants, these volatile organic compounds are the key compounds that are involved in attraction of insect pests. In addition, the synergism between insect pheromones and plant volatiles can increase the attraction of insect pest, offering new strategies for the development of more effective and reliable pest control programs. Volatile mediated foraging behavior is important in insect pests when they target host plants. The volatiles of brinjal may be functionally more important in host-finding behavior of their insect pest. Samples of brinjal plant leaves, fruits, shoots and flowers were collected from the unsprayed brinjal field. Steam distillation method was used to extract the volatiles from shade dried brinjal leaves, shoots, flowers and fresh fruits. The small pieces of the plant material were subjected to steam distillation for 4 hours at a distillation rate of 50 ml/hour. In this study, gas chromatography coupled with mass spectrometry technique was used for the identification of volatiles extracted from host plant brinjal. The GC oven was programmed at an initial oven temperature of 40 ^{0}C increased at a rate of 1 ^{0}C/min to 50 ^{0}C, then increased at a rate of 4 ^{0}C/min to 210 ^{0}C, and then raised at a rate of 8 ^{0}C/min to a final temperature of 230 ^{0}C. The MS data of eluted compounds were acquired and identified by the comparison of their retention times to those of authentic standards and with mass spectra from NIST library. Results indicated that brinjal plant produces 1-Methyl-5,8-dimethoxy-1,2,3,4-tetrahydro-1,4-iminonaphthalene, Benzyl alcohol, Phenylethyl Alcohol, Benzeneacetaldehyde, Butylated hydroxytoluene and Methyl salicylate from leaves; Butylated hydroxytoluene, n-Octyl formate, Butyl phthalate and 1,3-Dioxolane, 2-(methoxymethyl)-2-phenyl from fruits; Benzyl alcohol, 1,6-Octadien-3-ol, 3,7-dimethyl, Butylated hydroxytoluene, Hydroquinone and Methyl salicylate from shoots; and 1,6-Octadien-3-ol, 3,7-dimethyl, Methyl salicylate, Butylated hydroxytoluene, Hydroquinone and Benzyl alcohol from flowers as major compounds.

Keywords*:* *Solanum Melongena*, GC-MS, Spectral Library, Plant Volatiles, Steam Distillation

[1] College of Chemical Sciences, Institute of Chemistry Ceylon, Rajagiriya, Sri Lanka and Department of Chemistry, Faculty of Science, University of Kelaniya, Kelaniya, Sri Lanka
[2] Department of Chemistry, Faculty of Science, University of Kelaniya, Kelaniya, Sri Lanka
[3] Department of Zoology and Environmental Management, Faculty of Science, University of Kelaniya, Kelaniya, Sri Lanka
[4] College of Chemical Sciences, Institute of Chemistry Ceylon, Rajagiriya, Sri Lanka; dinusha@ichemc.edu.lk