

## **HERBICIDAL ACTIVITY OF VOLATILE OILS FROM *EUCALYPTUS CITRIODORA***

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Indiscriminate amount of synthetic herbicides are being used over the world over to control weeds. Owing to their environmental and toxicological effects besides increasing herbicidal resistance among weeds, efforts are being made to find out new environment-friendly means of weed management. Natural plant products known for their great structural and chemical diversity offer a challenging and new area for the discovery of new herbicides. Among them essential oils from a number of higher plants are known to possess greater toxicity and responsible for allelopathic activity. In this direction, volatile oils from *Eucalyptus citriodora* were selected owing to their known pesticidal and phytotoxic properties. Therefore, studies were carried out to explore the effect of volatile oils from *E. citriodora* against some agricultural weeds such as *Phalaris minor*, *Chenopodium album*, *Echinochloa crus-galli*, *Ageratum conyzoides*, *Parthenium hysterophorus*, and *Amaranthus* spp. In a laboratory bioassay germination, seedling length, chlorophyll content and respiratory ability of weed plants was drastically affected. To test herbicidal activity of volatile oils, one-month-old mature weed plants were spray treated with volatile oils visible injury levels and estimations of chlorophyll content and respiratory activity were measured. The spray treated plants showed varying levels of injury and at concentration ranging from 2.5 to 7.5% of eucalypt oils the weed plants were killed two weeks after treatment. Likewise, the amount of chlorophyll and cellular respiration was also measured to be less in the treated plants. Plants spray treated with higher concentrations of eucalypt oils were desiccated and gave a wilted appearance. The action was similar to that of herbicide glyphosate. A rapid electrolyte leakage from the treated weed plants was observed indicating a severe effect on the membrane integrity. Based on the study, it could be concluded that volatile oils from *E. citriodora* possess weed-suppressing ability and could be used as a potential herbicide for future weed management programmes. Based on these observations it is concluded that eucalypt oils possess weed-suppressing ability and can be used as a bioherbicide for the management of weeds.