

Chemical Composition and Inhibitory Activity of Essential Oil from Decaying Leaves of *Eucalyptus citriodora*

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A study was undertaken to explore the content and composition of volatile oil from decaying leaves of lemon-scented eucalypt (*Eucalyptus citriodora* Hook.) not analyzed earlier. GC and GC-MS analysis of the oil (yield 0.6%) revealed the monoterpenoid nature with citronellal (52.2%), citronellol (12.3%) and isoisopulegol (11.9%) as the major constituents. Overall, 17 components were identified that accounted for over 94% of the decaying leaf oil. Surprisingly, the decaying leaf oil contained nearly 1.8% of *trans*-rose oxide, which is generally absent in eucalypt essential oil. Decaying leaf oil and its major 2 components (citronellal and citronellol) inhibited the germination and root elongation of two weeds – *Cassia occidentalis* (broad-leaved) and *Echinochloa crus-galli* (grassy weed). Based on the dose-response studies, I_{50} values were determined for decaying leaf oil and the effect was more on germination only of broad-leaved weed (*C. occidentalis*), whereas that of citronellal and citronellol were on germination as well as root length of *E. crus-galli* (grassy weed). Based on I_{50} values it was observed that citronellal was more phytotoxic and germination inhibiting in nature, whereas citronellol was a more potent root inhibitor, thereby indicating a possible different mode of action. The study concludes that decaying leaf oil hold a good commercial value for exploitation as weed management agent.

Key words: Decaying Leaf Essential Oils, I_{50} Values, Germination Inhibitor