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Genotoxic effect of *Lippia alba* (Mill.) N. E. Brown essential oil on fish (*Oreochromis niloticus*) and mammal *(Mus musculus*).

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Highlights

- We tested the genotoxic effect of essential oil (EO) of *Lippia alba* as anesthetic for *Oreochromis niloticus* and *Mus musculus;*
- We administrate the EO by gavage in fish and in mice and by inhalation in fish;
- The *Lippia alba* OE present a low genotoxic effect in fish and no genotixic effect in mice.

ABSTRACT

"Erva cidreira" (*Lippia alba* (Mill.) N. E. Brown) is popular for its therapeutic properties, especially its sedative properties. Such properties led to the discovery of the anesthetic action of *Lippia alba* essential oil in fish culture. The objective of this study was to evaluate the genotoxic effect of *Lippia alba* essential oil in fish and mammals. The oil was extracted by hydrodistillation with a Clevenger apparatus and analyzed by gas chromatography coupled to mass spectrometry (GC-MS), where the compounds linalool, eucalyptol, γ-muurolene, and caryophyllene were identified as the most abundant compounds. *Lippia alba* essential oil showed inhibitory activity on LPS-stimulated Nitric Oxide (NO) production (77% at 20 $\mu g.mL^{-1}$) in RAW 264.7 macrophages without influence cellular viability. Genotoxic action was observed by micronucleus and comet assay in the doses 100, 200 and 300 $mg.Kg^{-1}$, showing greater damage to fish than mammals. When we compared the treatment modes, greater damage was