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Authors: Edgar Hell Kampke, Maria Eduarda de Souza Barroso, Franciane Martins Marques, Marcio Fronza, Rodrigo Scherer, Mayara Fumiere Lemos, Bianca Prandi Campagnaro, Levy Carvalho Gomes



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

Edgar Hell Kampke¹, Maria Eduarda de Souza Barroso¹, Franciane Martins Marques¹, Marcio Fronza¹, Rodrigo Scherer¹, Mayara Fumiere Lemos¹, Bianca Prandi Campagnaro¹, Levy Carvalho Gomes^{1*}

¹ Universidade Vila Velha, Rua Comissário José Dantas de Melo, 21, Boa Vista 29102-770, Espírito Santo, Brazil;

* Corresponding author: Levy Carvalho Gomes – levy.gomes@uvv.br

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 genotoxic 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 $\mu\text{g.mL}^{-1}$) 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

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