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PHYTOCHEMICAL PROFILE AND BIOACTIVITY OF *Lantana camara* LEAF EXTRACT

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Lantana camara L. (Verbenaceae) is a plant widely utilized in traditional medicine for the treatment of wounds, inflammatory disorders, and microbial infections, largely attributed to its rich phytochemical composition, including flavonoids, phenolic acids, and triterpenes, which are known for their antioxidant and anti-inflammatory activities. Despite its ethnopharmacological relevance, scientific investigations into its pharmacological potential, especially in the context of inflammatory skin diseases, remain scarce and incomplete. This study aimed to evaluate the *in vitro* antioxidant and anti-inflammatory activities of a hydroalcoholic leaf extract of *L. camara* (LCHA) and characterize its phytochemical composition to support its potential therapeutic applications. Quantitative spectrophotometric assays revealed substantial levels of total phenolics, terpenes, and saponins in the extract. Advanced analytical characterization using UFLC-QTOF-MS identified key bioactive compounds such as lamiide, geniposide, pectolinarin, luteolin-7-O-glucoside, and rhamnocitrin-O-glucoside, many of which have been previously linked to anti-inflammatory and antioxidant effects. The biological activities of LCHA were assessed in peritoneal macrophages and L929 fibroblasts to evaluate cytotoxicity using MTT assay. Cell viability remained above 80% for all evaluated concentrations of LCHA in peritoneal macrophages, indicating no cytotoxicity effects on this cell line. In L929 fibroblasts, viability remained above 70% only up to a concentration of 150 µg/mL, suggesting a concentration-dependent reduction in cell viability, suggesting a concentration-dependent reduction in cell viability. The production of nitric oxide (NO) was indirectly evaluated by quantifying nitrites (NO_2^-) using the Griess method and the extract exhibited potent inhibition of NO production, achieving complete suppression at the highest tested concentration (300 µg/mL). Also, LCHA significantly decreased lipid body accumulation by approximately 69% in activated macrophages. Antioxidant capacity was confirmed through multiple complementary assays, including DPPH radical scavenging, phosphomolybdenum reduction, the β-carotene/linoleic acid system, and intracellular reactive oxygen species (ROS) quantification, with LCHA reducing lipid peroxidation by 42% and ROS levels by 65% in stimulated macrophages. Collectively, these results corroborate the traditional use of *L. camara* and provide a mechanistic basis for its potential application as a plant-derived therapeutic agent targeting inflammatory skin conditions. The distinctive phytochemical composition and significant bioactivities identified herein underscore the relevance of further preclinical and translational studies aimed at developing standardized and effective formulations.

Keywords: *Lantana camara, Phytochemistry, Anti-inflammatory, Antioxidant.*