American Journal of Ethnomedicine, 4:2
DOI: 10.21767/2348-9502-C1-003

Chemical study, antioxidant analysis and evaluation of the larvicidal potential against *Aedes Aegypti Larvae* of essential oil of *Ocimum Basilicum Linn*

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The purpose of this research was to accomplish chemical study, antioxidant analysis and evaluation of the larvicidal potential against *Aedes aegypti larvae* of essential oil from the leaves of *O. basilicum Linn*. The research was carried out in the Pharmacognosy and Phytochemistry Laboratory, Department of Biologicaland Health Sciences, Federal University of Amapá (UNIFAP), between July 2013 and March 2014. Arthropoda Laboratory, Department of Biological and Health Sciences, Federal University of Amapá (UNIFAP) between September 2013 and March 2014. The essential oil was obtained by hydrodistillation; the identification and quantification of components was achieved with the use of GC-MS analysis. The antioxidante activity was evaluated by the method of sequestration of DPPH. The essential oil was tested in the third larval state of the development of the mosquito Aedes Aegypti. The third larval instar were exposed to different concentrations of the oil (500, 400, 300, 200 and 130 ppm) in triplicates. Chromatographic analysis identified that the major constituents found in essential oil of *O. basilicum* were limonene (13%), 1,8-cineole (15%), linalool (20%) and methyl chavicol (45%). In trials of free radicals sequestration, the essential oil showed (AA%) 67.35±1.11 in the highest concentration and inhibitory concentration, IC50 value of 61.517 mg/mL. The essential oil of *O. basilicum* showed larvicidal potential with CL50 of 67.22 ppm. A more detailed study should be done to verify the larvicidal potential and biological mechanism of action, as several authors claimed that the constituent of essential oils affect the nervous system of the mosquito Aedes Aegypti and the action mechanism is not yet fully elucidated. New studies demand the development of tests using samples of lower concentrations to verify the degree of toxicity in other animal species, including man, and preparation of formulations that may function as a natural alternative to combat mosquito larvae.

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Piroxicam loaded solid lipid nanoparticles for topical delivery: Preparation, characterization and *in vitro* permeation assessment

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During the recent years, there has been rising attention to the development of topical delivery systems to facilitate drug permeation through the skin. The drugs commonly used are those with debatable oral administration. Although piroxicam is a valuable anti-inflammatory, antipyretic and analgesic drug, long term oral administration is limited due to the various GI side effects. The main aim of this study was to prepare and assess a topical formulation of piroxicam based on Solid Lipid Nanoparticles (SLNs), to improve its percutaneous permeation rate. Topical nano-lipidic gel of piroxicam was formulated and its pharmaceutical characteristics were evaluated. Piroxicam loaded SLNs were formulated by solvent emulsification evaporation method. The SLNs were composed of stearic acid and cholesterol as lipid phase, Brij35 and Brij72 as a stabilizer and acetone was used to dissolve the lipidic ingredients of the formulation. Particle size assessment, drug loading determination, entrapment efficiency assessment, and *in vitro* release study and skin permeation of the piroxicam was determined to characterize the SLNs and then these nanoparticles were formulated in gel as topical delivery system to assess percutaneous permeation of piroxicam. The SLNs were prepared in different size ranges from 100-300 nm and drug release behavior from two different nano-sized SLN suspensions was evaluated. Piroxicam nano-lipidic gel showed increased skin permeation of the drug over commercial piroxicam gel formulation and also mean particle size of formulated SLNs had significant effect on permeation rates.

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