

Title: Antibacterial and antibiotic-modifying activity of the commercialized essential oil of *Copaifera* spp. Associated with LED lights against a *Staphylococcus aureus* strain

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Abstract: Copaiba oil is widely used in medicine due to its antibacterial, anti-inflammatory, healing, antiviral, antiseptic and analgesic properties. Thus, the main objective of the study is to evaluate the antibacterial activity and modifier of the antibiotic action of the commercialized essential oil of four species of *Copaifera* spp. in combination with Ampicillin and LED lights against the multidrug-resistant strain of *S. aureus* (SA 10). The essential oil was obtained commercially through the doTERRA[™] company. The evaluation of the antibacterial and modulating activity was performed using the microdilution methodology in a 96-well plate, using blue 415 nm, red 620 nm and yellow 590 nm LEDs and Ampicillin at an initial concentration of 1.024 µg/mL. The experiments were carried out in triplicate and submitted to ANOVA statistical analysis, considering a significant value of $p < 0,05$. The essential oil of *Copaifera* spp. did not show antibacterial activity alone, but showed significant modifying activity when combined with Ampicillin in the absence of LED and with red LED. However, the yellow LED and the blue LED had no significant modulating effect. The results suggest the presence of an enzymatic mechanism of resistance, indicating relevance for the development of future scientific research, aiming to help in the treatment of lesions caused by multiresistant pathogens.

Keywords : Antibacterial Copaiba Modulating activity Phototherapy

<https://doi.org/10.1016/j.jff.2024.106075>

<https://www.sciencedirect.com/science/article/pii/S175646462400077X>