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Herbal Antimalarials in Modern Therapeutics: A Systematic Review of Efficacy, Safety, and Bioactive Constituents

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Abstract: *The emergence of multidrug-resistant Plasmodium falciparum strains has necessitated a re-evaluation of phytopharmaceutical agents. This review systematically analyzes the efficacy, safety, and modern therapeutic applications of key herbal antimalarials, specifically Artemisia annua, Cryptolepis sanguinolenta, and Cinchona alkaloids. Clinical evidence indicates that whole-plant infusions of A. annua may achieve cure rates superior to standard Artemisinin-Based Combination Therapies (ACTs) in certain adult populations (100% vs. 30%), attributed to the synergistic "artemisinin-independent" effects of non-peroxide constituents. Conversely, Cryptolepis sanguinolenta demonstrates potent antiplasmodial activity (93.5% cure rate) but carries significant risks of cytotoxicity and teratogenicity due to DNA intercalation by indoloquinoline alkaloids. Advances in nanotechnology, including transferrin-conjugated nanostructured lipid carriers (NLCs) and liposomal delivery, offer promising avenues to enhance bioavailability and mitigate systemic toxicity. This review synthesizes current data to propose a paradigm shift toward standardized, nano-formulated herbal therapeutics.*

Keywords: *phytopharmaceutical*

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