

RESEARCH ARTICLE

Ethnomedicinal Plants Used for Treatment of Infectious Diseases by Dayak Ethnic in Borneo, Indonesia

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Abstract

The Dayak tribe, residing on the island of Borneo in Indonesia, continues to uphold their ancestral cultural customs involving using medicinal plants for disease treatment. To assess the efficacy of chosen Dayak traditional medicinal plants, commonly utilized for treating diverse infectious ailments, against bacteria responsible for infections. Samples of medicinal plants (*Garptophyllum pictum*, *Eleutherine bulbosa*, *Oscimum sanctum*, *Cassia alata*, *Callicarpa longifolia* Lam., *Hibiscus rosa-sinensis*, *Dracaena cantleyi*, *Uncaria gambir* Roxb., *Rhodomirtus tomentosa*, *Gomphrena globose*) were extracted using absolute methanol and water and tested for their antimicrobial activities against stock isolates and standard strains of *Staphylococcus aureus*, *Streptococcus pyogenes*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Enterobacter aerogenes* using agar well diffusion and micro titer plate methods. Crude extracts of *Eleutherine bulbosa*, *Dracaena cantleyi*, *Oscimum sanctum*, and *Uncaria gambir* Roxb. inhibited bacterial growth by 100%, 100%, 40%, and 25% against the test organisms, respectively. These plants inhibited the growth of bacteria from 7 mm to 16 mm in diameter. Most of the plant extracts had antibacterial activities, among which *Eleutherine bulbosa* and *Dracaena cantleyi* inhibited the growth of 100% of the test organisms, respectively. The activities of methanolic extracts were greater than those of their corresponding water extracts. *Streptococcus pyogenes* was the organism most susceptible to the extract, while *Enterobacter aerogenes* demonstrated the highest resistance.

Keywords: Bacteria, Dayak tribe, infections, traditional medicinal plants

Introduction

Bacterial infections are diseases that can affect various body parts, such as the skin, lungs, brain, and blood, resulting from single-celled organisms multiplying or releasing toxins in the body. Diseases caused by bacterial infections continue to be a significant concern, particularly in poor and developing countries, due to the growing issue of antibiotic resistance.¹ The uncovering of antibiotics represents a remarkable triumph in human history; however, the growing issue of antibiotic resistance casts a shadow over this achievement.² To address the issue of antibiotic resistance in the management of infectious diseases, it is crucial to persistently investigate natural substances as potential sources for novel antibacterial agents.³⁻⁵

There is a growing curiosity in uncovering the mysteries of traditional herbal treatments,

drawing upon insights gathered from local inhabitants and customary practitioners across various regions worldwide.^{6,7} Medicinal plants are plants that can be used to treat a disease. Since ancient times, medicinal plants have been used by rural communities.⁸⁻¹⁰ Traditional medicine for diseases using concoctions with essential ingredients from plants and everything that exists in nature is still in great demand by the public because usually the ingredients can be found easily in the environment.¹¹⁻¹³ Plants have long been used as a source of medicine for the treatment of various diseases. Around 35,000–70,000 plant species have been screened for their medicinal use.¹⁴ More than 4,000 phytochemicals have been cataloged and classified by protective function and physical and chemical characteristics, of which 150 phytochemicals have been studied in detail.¹⁵ Plants synthesize hundreds of chemical compounds for various functions, including

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