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Antimicrobial Activity of *Polygonum minus* Partition Extract and Their Phytochemical Properties.

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Structured Abstract

Background: This study investigates the antimicrobial and phytochemical attributes of *Polygonum minus* (*P. minus*) partition extract. Beginning with leaf processing and methanol extraction, it undergoes antimicrobial testing. Gas chromatography-mass spectrometry analyses phytochemical components. Anticipated outcomes involve confirming antimicrobial efficacy, discovering potential agents, and identifying active compounds for novel antimicrobial development. Validating traditional uses supports traditional medicine, promoting sustainable healthcare practices. The research aims to fill scientific knowledge gaps for future medicinal applications of *P. minus*.

Methods:

The study on *P. minus* follows a systematic approach, commencing with meticulous plant collection and thorough preparation. Extraction yields *P. minus* methanol extract (PMME), followed by partitioning to isolate specific components. Comprehensive phytochemical identification precede antimicrobial activity assessment, incorporating the Kirby-Bauer method and biochemical tests. Statistical analysis ensures meaningful conclusions, enabling a comprehensive exploration of *Polygonum minus*'s botanical, chemical, and therapeutic aspects.

Results: GC-MS analysis identifies Caryophyllene and Dodecanal as one of major compounds. Bacteria identification reveals gram-positive characteristics. Catalase tests confirm positive results for all tested bacteria. However, the disc diffusion assay suggests limited antimicrobial activity at lower concentrations, possibly influenced by suboptimal levels or inherent bacterial resistance

Conclusion. The methanol extract of *P. minus* demonstrated limited antimicrobial activity against pathogenic bacteria, with no dose-dependent inhibition observed. Phytochemical profiling identified 40 compounds, none proven to be key antimicrobial agents, requiring further research to understand their mechanisms and effectiveness.

Keywords: *Polygonum minus*, phytochemical, *Polygonum minus* methanol extract (PMME)

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