

Phytochemical and Antibacterial Screening of *Chromolaena odorata* Leaf Extract

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ABSTRACT

The discovery of antibacterial drugs from natural sources as a substitute for preventing bacterial resistance has become necessary due to the increase in bacterial drug resistance. *Chromolaena odorata* has been reported to have antibacterial effects. Therefore, this study investigated the phytochemical components and antibacterial properties of *C. odorata* leaves. *C. odorata* leaves were collected, prepared, and extracted using a standard procedure with 95% methanol and 95% ethanol, respectively. Both extracts were subjected to phytochemical screening and Gas Chromatography-Mass Spectrometry to detect phytochemical compounds. *Chromolaena odorata* methanolic extract at a concentration of 50 mg/mL, 100 mg/mL, 150 mg/mL and 200 mg/mL was carried out for antibacterial screening using the agar well diffusion tested on *Staphylococcus aureus* (ATCC 43330), *Bacillus subtilis* (B29), *Escherichia coli* (ATCC 25922) and *Pseudomonas aeruginosa* (ATCC 15442). The methanolic extract was present with tannin, terpenoid, alkaloid, and saponin while ethanolic extract was present with tannin and alkaloid. The GC-MS chromatogram identified as many as 27 and 19 compounds for ethanolic and methanolic extract, respectively. The *C. odorata* ethanolic extract consists mainly of Phenol (0.51%), Sesquiterpenoid (20.69%) and Fatty acid (39.2%). Meanwhile, *C. odorata* methanolic extract consists of Sesquiterpenoid (62.26%) and Fatty acid (17.11%). Antibacterial activity of *S. aureus* was the highest inhibition zone diameter with 7.67 mm to 10.33 mm from 50 mg/ml to 200 mg/mL concentration of *C. odorata* extract. *Escherichia coli* and *B. subtilis* inhibition zones diameter was 200 mg/mL concentration of *C. odorata* extract. No antibacterial activities were obtained for *P. aeruginosa*. This study suggests that *C. odorata* consists of a variety of phytochemicals and contains antibacterial properties. Thus, *C. odorata* represents a promising natural source for antibacterial resistance drugs.

Keywords: *Chromolaena odorata*, phytochemicals, antibacterial agents

1. INTRODUCTION

Chromolaena odorata is a perennial weed belonging to the Asteraceae (Compositae) family and is found worldwide, including in Malaysia. Locally, this plant has traditionally been known as Pokok Kapal Terbang or Pokok Malaysia (Matawali et al., 2019). *Chromolaena odorata* can be found in grasslands, marginal lands, and small forests that are able to grow throughout the year. *Chromolaena odorata* can threaten other plants because of its ability to inhibit other plant growth (Zahara, 2019). The plant are traditionally used to cure burns, soft tissue wounds, dysentery, headaches, toothaches, stop bleeding, and skin diseases (Abdullah et