Phytochemical screening and antibacterial testing of gaharu trees 
(*Gyrinops versteegii* (Gilg) Domke) from Lombok Island

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Abstract

The plant of *Gyrinops versteegii* (Gilg) Domke is a species producing agarwood, widely used as ingredients of traditional medicines, fragrances, or means of religious ceremonies. The overall objectives of the study were to screen secondary metabolite contents and antibacterial potential from leaves, stem, and agarwood extracts of agarwood plant species *G. versteegii* (Gilg) Domke collected from Lombok Island. Extraction was conducted by maceration with ethanol for the agarwood and methanol for the leaves. The screening by color testing indicated that leaves extract contents the group compounds of terpenoid, flavonoid, tannin, alkaloid, and antraquinon/antrasena. Agarwood extract contained terpenoid, tannin, and flavonoid. And the stem extract dominated by flavonoid compounds. Antibacterial test carried out Gram Positive and Gram Negative bacteria showed that antibacterial of the species of agarwood *G. versteegii* tended to have low potency for antibacterial agents.

Keywords: *Gyrinops versteegii*, agarwood, antibacterial test, secondary metabolite

Introduction

Agarwood is a plant producing resin belonging to the family *Thymelaeaceae*. Agarwood resin has unique fragrance widely used as ingredients of traditional medicines, raw material for perfume industry, cosmetics, incense, and preservatives of accessories. Due to this reason it is highly valuable. Indonesia also known as one of the largest source of commercial agarwood where several endemic agarwood grow. Agarwoods from genus *Aquilaria* and *Gyrinops* widely grown in Sumatra, Kalimantan, Sulawesi, Nusa Tenggara, Maluku, Irian, and a part of West Java. Both of that agarwood genus can produce the best unique fragrance resin than others (Chakrabarty et al., 1994). Several species of agarwoods grown in Lombok Island that are *ketimunan* (*Gyrinops versteegii* (Gilg) Domke), *kayu ramin* (*Gonystylus bancanus* (miq.) Kurz) dan *G. Macrophylus* (Miq.) Air Show. Agarwood from *Gyrinops versteegii* (Gilg) Domke most preferred by consumers since its own characteristic distinguish from the others (Parman et al., 1996).

*Gyrinops versteegii* (Gilg) Domke was an endemic and rare plants, however, it is cultivated on the island of Lombok. Local people used this plants for traditional medicinal such as malaria and stimulant drugs either as an addition appetite and lust, asthma, and bronchitis (Kanwil Dephut NTB, 1995). Research on secondary metabolites compounds contained in the plant and the resin produced is has not been widely reported yet. Therefore, this research as a first step to explore the potential of agarwood to determine metabolites secondary groups and its bioaktivitity particularly anti-bacterial agents.

Materials and Methods

Material

Material used in this study were leaves, stem, and agarwood parts of *Gyrinops versteegii* (Gilg) Domke, methanol, ethanol, n-Hexane, Dichloromethane (DCM), conc. H$_2$SO$_4$, acetic acid anhidrate, FeCl$_3$ 1%, chloroform, HCl 2M, Dragendorff reagent, Meyer reagent, Wagner ragent, NH$_3$ 10%, acetone, Mg, Broth media, NaCl, and aquadest.

Method

The Steps in this research were extraction, phytochemical screening, and antibacterial test. Agarwood leaves and stem species *Gyrinops versteegii* (Gilg) Domke was collected from Kekait, West Lombok. Agarwood resin is produced from inoculation process by Research Group of Faculty of Agriculture, University of Mataram.

Extraction

Samples of leaves, stem, and agarwood cut into small pieces and dried, then, blended to powder with a homogeneous size for maceration process. Leaves sample macerated with methanol while stem and agarwood resin macerated with ethanol and then filtrated. After that, the filtrate evaporated using rotary evaporator to obtain concentrated extract of leaves, stem, and agarwood.