

Effect of using Laja Gowah (*Alpinia malaccensis* (Brum.f) Roscoe) oil in Reducing the Number of *Staphylococcus aureus* Colonies in Hospital Inpatient Rooms

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Gowah (*Alpinia
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aureus* Colonies in
Hospital Inpatient
Rooms**

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Introduction



NOSOCOMIAL INFECTION

healthcare-associated infections (HAI), are infection(s) **acquired during the process of receiving health care** that was not present during the time of admission

The causes of NI =>

- the use of medical equipment,
- treatment items,
- aids for defecation and urination,
- air circulation



HOSPITAL



Staphylococcus aureus

- Gram-positive bacteria that are pathogenic and form biofilms, one of the causes of nosocomial infections in hospital inpatient rooms
- infection due to pathogenic bacteria, the spread is through air media (airborne)



ANTIBACTERIAL AGENT

Handling to suppress the spread of pathogenic bacteria in hospital inpatient rooms
→ carbolic fluid and spraying a disinfectant with an active ingredient of sodium hypochlorite



Essential Oil
Diffuser

- air diffusion method by utilizing a humidifier equipped with an ultrasonic diffuser.
- Humidifier is a device that functions as an air humidifier that can increase humidity by spraying water vapor into the air.
- Water vapor that is sprayed can bind to bacteria and viruses in the air.
- A humidifier equipped with an ultrasonic diffuser is able to break down essential oil molecules into small particles due to the effect of ultrasonic vibrations which are then diffused through water vapor

Laja gowah (*Alpinia malaccensis* (Brum.f) Roscoe)



- The main content of laja gowah essential oil is methyl cinnamate, cineol -pinene
- LGO is reported to have antibacterial activity against Gram negative and Gram positive bacteria (Sitorus & Satria, 2016).
- Methyl cinnamate is a derivative of cinnamic acid which is widely used in the cosmetic industry

the antibacterial activity of laja gowah oil was tested against the spread of *S. aureus* bacteria in the hospital inpatient room using the air diffusion method.



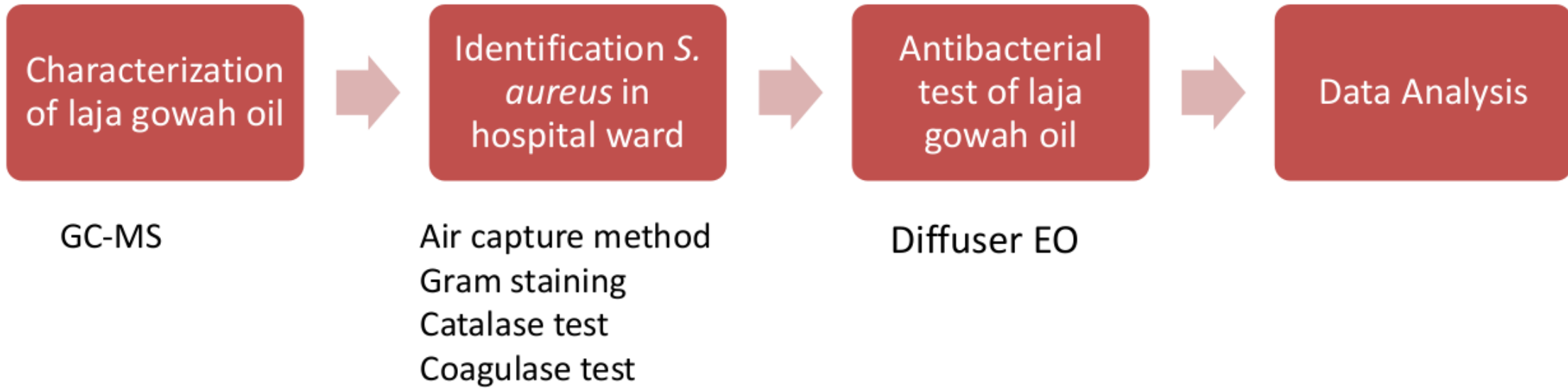
Materials and Method

The research was conducted in the third class inpatient room at Rumah Sakit Umum Anwar Medika Sidoarjo, Microbiology Laboratory in STIKES Rumah Sakit Anwar Medika and Instrumentation Laboratory of Brawijaya University Malang in May – August 2019.

The materials used include laja gowah oil (Galanga Oil, CV. Nusaroma). Depok), Mannitol Salt Agar (Merck), aquades, Lugol's reagent, safranin, and Crystal violet. The instruments used include Gas Chromatography-Mass Spectrophotometer (GCMS QP 2010, Shimadzu), autoclave (GEA), incubator (Memmert), and Essential Oil Diffuser.

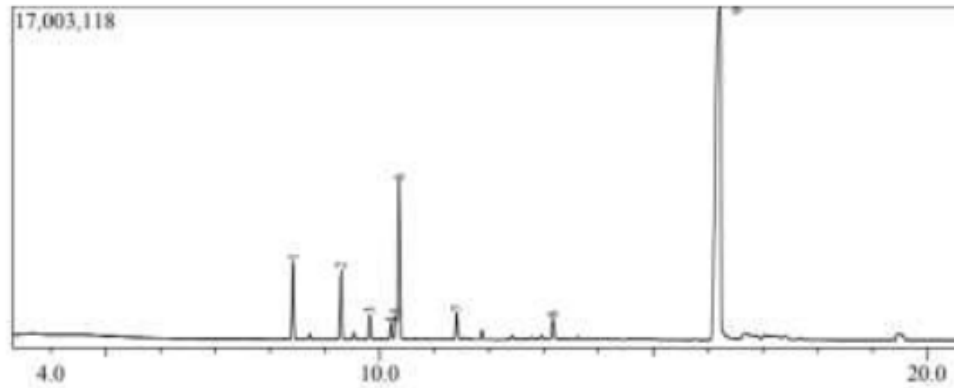


Method



Result & Discussion

Chemical Compounds of Laja Gowah Oil

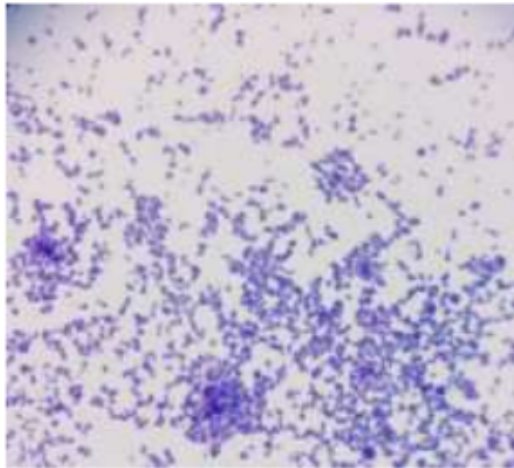


No	Compound	yield (%)*	SI
1.	Alpha-pinene	5,14	98
2.	Beta-pinene	4,84	97
3.	phellandrene	1,58	96
4.	o-cymene	1,01	96
5.	limonene	0,60	91
6.	1,8-cineole	9,69	96
7.	fenchone	1,72	96
8.	Linalyl propionate	1,47	95
9.	Methyl cinnamate	73,94	97

* area on the Laja Gowah oil GC chromatogram



Identification of S. aureus Bacteria in Class Inpatient Rooms



Gram stain of bacterial isolates from the inpatient room (10x100 magnification)



Positive catalase test results for bacterial isolates (the presence of oxygen gas bubbles in both spheres)



Coagulase test results (A) are positive and (B) are negative



S. aureus



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GRADEMARK REPORT

FINAL GRADE

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GENERAL COMMENTS

Instructor

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