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**13<sup>TH</sup> INDES 2024**  
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THE 13<sup>TH</sup> INTERNATIONAL INNOVATION, INVENTION & DESIGN COMPETITION 2024

**EXTENDED ABSTRACTS**

**e-BOOK**

# EXTENDED ABSTRACTS e-BOOK

THE 13th INTERNATIONAL  
INNOVATION, INVENTION &  
DESIGN COMPETITION 2024



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Office Of Research, Industry,  
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Perpustakaan Negara Malaysia

Cataloguing in Publication Data

No e- ISBN: 978-967-2776-31-4

Cover Design: Dr. Mohd Khairulnizam Ramlie  
Typesetting : Zarinatun Ilyani Abdul Rahman

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# “JOFIL” JOHAR LEAF EXTRACT LOTION AS ANTIFUNGAL

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## ABSTRACT

Sometimes, it is enough to make humans busy, so they often forget to pay attention to cleanliness and health. Cleanliness and personal health are the primary keys to maintaining a healthy body and minimising the risk of transmission of dangerous diseases. Lack of personal hygiene can cause various serious diseases, including skin diseases caused by multiple viruses, bacteria, and fungi that multiply on the skin's surface. Thus, we are interested in making innovations to solve these problems by creating products such as "JOFIL" (Johar Leaf Lotion), which can be used as topical antifungal drugs. This product's content of johar leaves serves as an inhibitor of fungal growth and bacteria that can interfere with human health. The product is practical and easy to use. Users regularly apply it to the area of infection twice daily so that fungal growth and bacteria can be stopped and the skin is free from itching.

**Keywords:** Activities, Cleanliness and health, Skin diseases, Antifungal

## 1. INTRODUCTION

Johar leaves (*Cassia siema Lamk*) are included as tropical plants because they can grow well in tropical regions such as Indonesia. It is a large woody shade plant of the Fabaceae or Leguminosae family. This plant found secondary metabolites of interquinone saponins, flavonoids, and alkaloids (Fitriah, Mappiratu, & Prismawiryanti, 2017). In addition, several other studies have also shown that Johar leaf extract has other potential antimalarial activities antifungal, as well as research conducted by Pine showed that Johar leaf extract cream preparations were able to inhibit the growth of *Candida albicans* fungi (Pine, Azis, & Darmawan, 2018).

At this time, the utilisation of Johar trees is not optimal. Generally, this tree is used as a shade for the road or yard. In other respects, it is a folk remedy to treat scabies, ringworm, and other fungal and bacterial-caused skin diseases. It uses boiled water leaves as a mixture of water used for bathing. We are interested in innovating by utilising Johar leaf extract as an herbal medicine in the form of lotions that can treat or prevent skin diseases caused by fungi and bacteria. We call it JOFIL (Johar Leaf Lotion).

Skin diseases are diseases outside the body with symptoms such as itching, pain, numbness and redness caused by chemicals, sunlight, viruses, weak immunity, microorganisms, microbes, fungi, and personal hygiene factors (Irfayanti, Wambrauw, Wahyuni, & Maranden, 2023). Usually, this happens to people who do a lot of activity, so they do not pay attention to cleanliness or to people who work in dirty areas such as rice fields and rivers. Skin diseases create discomfort and reduce self-confidence. If left unchecked, there will be an infection of the skin that causes pain. In the treatment, one also should not be careless, let alone choose drugs that contain a lot of chemicals that sometimes aggravate the disease.

JOFIL is an herbal medicine with lotion from Johar leaf extract to treat and prevent skin diseases caused by fungi and bacteria. This herbal medicine is safe and comfortable because it is made from

natural ingredients of johar leaves and is used as a lotion. How can it be used by applying it to the infected area twice a day or preventing skin diseases by using it daily as a skin moisturiser?



## 2. METHODOLOGY

### 2.1 Tools and Materials

The tools used in the research are 100 mL beaker glass, 500 mL beaker glass, 100 mL volumetric flask, 250 mL Erlenmeyer flask, glass funnel, 5 mL measuring pipette, dropper pipette, pipette ball, spatula, watch glass, glass stirrer, test tube, orbital shaker, rotary evaporator, water bath, jofil packaging. Then the materials needed are Johar leaves, 96% ethanol, filter paper, aluminium foil, acetone, stearic acid, lanolin, acetyl alcohol, propylparaben, water, dragendorff solution, magnesium, HCl, acetic acid, sulfuric acid,  $\text{FeCl}_3$ .

### 2.2 Procedures

The method used to obtain Johar leaf extract is the maceration extraction method with 96% ethanol solvent (Daeli & Ridho, 2023). This is done by pulverising dried Johar leaves with a chopper and then filtered into powder. The powder was macerated with 96% ethanol in a ratio of 1:10 on a shaker for three days. Maceration is carried out for three days in a place protected from direct sunlight. After three days, the pulp is separated and re-macerated for two days. The extracts obtained were collected and concentrated using a rotary evaporator to make a thick extract. Furthermore, the content of active compounds in Johar leaf extract, including alkaloid, flavonoid, tannin, steroid, and saponin compounds, was tested.

After getting the Johar leaf extract, proceed to make lotion. All oil phase ingredients, namely stearic acid, lanolin, acetyl alcohol, and propylparaben, are dissolved at  $75^\circ\text{C}$ . This formulation refers to (Aljanah, Oktavia, & Noviyanto, 2022) research. Then, water is added while stirring to form an emulsion. The mixture was added with Johar leaf extracts. The lotion preparation was put into a container, and an antifungal test was conducted.

## 3. FINDINGS

JOFIL is the latest breakthrough in skin disease medicine because it is a lotion and herbal product that uses Johar leaf extracts. Compared to other products such as ointments, tablets, or powders, drugs in the form of lotions are more accessible for users to use. In addition to preventing and treating skin diseases, lotions can also be used as a skin moisturiser, which, of course, can be used daily.

Some other products have a pungent odour and a burning sensation on the skin, causing discomfort. Johar leaves, the main ingredient of this product, do not have a very pungent odour; they even tend to be tasteless. This product does not cause heat effects on the skin when used, so it is very convenient.

Johar leaves are commonly used as a traditional medicine for skin disease drugs using boiled water. We used ethanol solutions to examine whether they contained alkaloids, flavonoids, saponins, steroids, and tannins with antifungal properties. Here are the test results:

**Table 1** Phytochemical Test Results of Johar Leaves Extracts

Phytochemical Tests	Results
Alkaloids	+
Flavanoids	+
Saponins	+
Steroids	-
Tannins	+

The test results concluded that johar leaf ethanol extracts contain alkaloids, flavonoids, saponins, and tannins with antifungal properties. Steroid compounds were not found in extracts with ethanol solvent. This content makes johar leaves an effective itch remedy to stop the growth of fungi and bacteria.

#### 4. CONCLUSION

Although busy, a person must still maintain the cleanliness and health of his body to avoid dangerous diseases, especially skin diseases caused by viruses, bacteria, and fungi that perch on the body. We are making an innovation in the face of this problem. We created JOFIL (Johar Leaf Lotion), the content of alkaloids, flavonoids, saponins, and tannins in johar leaves, which have antibacterial properties that can treat skin diseases. The product is very effective in its use. This product can be applied directly to the infected area or used daily as a skin moisturiser.

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