

Antibacterial activity test of yen thuo leaf (*leeaindica merr*) ethanol extract on staphylococcus epidermidis bacteria and its cream production

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ABSTRACT

Infection is the process of entry of parasites and contact with the host. Infection occurs when the parasite is able to penetrate or through the host's defenses and live in it. This research was conducted using a parametric experimental method. The parameters used refer to the Indonesian Materia Medika. Antibacterial activity test was carried out by the agar diffusion method using a paper scraper. The parameter measured is the size of the inhibition zone around the paper tray. The results of measuring the pH of the ethanol extract cream preparation of yen thu leaves with observations for 5 weeks showed that the pH of the ethanol extract cream preparations of yen thou leaves did not decrease. The pH of the preparation was determined using a pH meter. The test results on the pH of the cream preparations obtained show that the cream preparations produced are in accordance with the pH of the skin and can be used safely and do not cause irritation to the skin because according to Balsam and Sagarin (1972), the pH of cream preparations suitable for skin pH is between 5 to 8.

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INTRODUCTION

Yen thuo plant is believed to treat various kinds of cancer. It can also help treat skin injuries by applying liquid from the mashed leaves to the injured skin. Communities in Karo District use this leaf concoction as an anti-tetanus drug and wound infection medication. In Kelantan - Malaysia, this plant is used to speed up the fruit ripening process (peram / meram).

Injury or injury is a damage to the structure or function of the body due to physical or chemical coercion or pressure. Such as burns, cuts, broken bones, bruises, abrasions and wounds on the skin that can cause bleeding. If the wound is left alone without treatment, over time it can allow various kinds of viruses and bacteria to enter which can cause infection. Infection is usually caused by several microorganisms such as bacteria, parasites, viruses and fungi. Bacteria that often cause infections in humans are *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*, and

Klebsiella pneumonia (Jawetz, et al., 2005). *Staphylococcus epidermidis* bacteria is a normal flora on the skin and isolated from contaminated blood (Motoyama, et al, 2009).

Infection is the process of entry of parasites and contact with the host. Infection occurs when the parasite is able to penetrate or through the host's defenses and live in it (Irianto, 2006). Infection is also a major cause of disease in the world, especially in tropical areas such as Indonesia (Kuswandi, et al., 2001).

The emergence of considerations of antibiotic resistance is a serious reduction in antibiotic efficacy and may increase the number of infections that are difficult to treat. The development of non-antibiotic drugs began to be developed to overcome the problem of resistance to antibiotics (Chusri et al., 2009). Based on the experience of the people who have experienced the benefits of this plant, a study was conducted to test the antibacterial activity of the ethanol extract on the growth of the *Staphylococcus epidermidis* bacteria and the manufacture of the cream.

RESEARCH METHOD

Place of Research Implementation

This research was conducted at the Microbiology Laboratory and Recipe Formulation Laboratory at Efarina University, Jl. Sudirman No. 8 Pematangsiantar, Simalungun Regency, North Sumatra.

Types of research

This research was conducted using a parametric experimental method. The parameters used refer to the Indonesian *Materia Medika*. Antibacterial activity test was carried out by the agar diffusion method using a paper scraper. The parameter measured is the size of the inhibition zone around the paper tray. This study included collecting and processing samples, examining organoleptic characterization of *simplicia*, screening for phytochemical *simplicia* of *yen thuo* leaves, preparing ethanol extract of *yen thuo* leaves, testing the antibacterial activity of ethanol extract of *yen thuo* leaves and formulation of cream of ethanol extract of *yen thuo* leaves. Antibacterial activity test against *Staphylococcus epidermidis* bacteria.

RESULTS AND DISCUSSIONS

Simplisia Characteristic Examination Results

Yen Thuo leaves

The results of the macroscopic examination carried out by organoleptic method were the leaf *simplicia* of *yen thuo* which was dark green in color, oval in shape, leaf veins were clear, the leaf surface was shiny, the leaf edges were serrated, and the leaf tips were tapered.

Simplisia

The results of macroscopic examination of *Yen* leaf *simplicia* powder were carried out using an organoleptic method, namely the powder is faded green in color, has a slightly bitter taste and has a characteristic odor. Results of microscopic examination of *simplicia* powder.

Results of Phytochemical Screening

Determination of the chemical compound class of simplex ethanol extract of *Yen Thuo* leaves to obtain information on the class of secondary metabolites contained in it. Results of phytochemical screening of *yen thuo* leaf *simplicia* powder.

The results of the phytochemical screening of *simplicia* powder gave positive results for alkaloids, flavonoids, glycosides, saponins, tannins and steroids/triterpenoids.

The alkaloid group identified in the *simplicia* powder was indicated by the presence of white or yellowish white precipitate after adding Mayer's reagent, black brown precipitate after adding Bouchardat reagent and red/orange precipitate after adding Dragendroff's reagent

(Depkes RI, 1995). Mg powder with concentrated HCl appears yellow or orange. with the addition of 1 drop of 2N HCl the foam did not disappear (Depkes RI, 1995). Steroids/triterpenoids give positive results with the formation of a blue green color after adding the Liebermann-Burchard reagent (Harborne, 1984). The presence of glycosides was indicated by the formation of a purple ring with Molish reagent.

Extraction results

Extraction of 250 g of simplicia powder by maceration using 70% ethanol solvent aimed at extracting the compounds contained in the simplicia of yen thuo leaves, both polar and non-polar, yielded 33.5 g of ethanol extract of yen thou leaves (yield = 0.134%) .

Bacterial Activity Test Results

Results of bacterial activity test of yen thou leaf ethanol extract against *Staphylococcus Epidermis* bacteria.

The results of the anti-bacterial activity test of the ethanol extract of yen thuo leaves can inhibit the growth of *Staphylococcus epidermidis* bacteria. The sensitivity of pathogenic bacteria to an anti-microbial must be tested with various concentrations to determine the level of concentration that causes the growth of these bacteria to be inhibited or die (Brawijaya FK Microbiology Team, 2003)

Results of the Evaluation of Preparations

Homogeneity test results

Experiments that have been carried out on cream preparations did not obtain granules on the glass slide or on parchment paper from the cream base preparation and from the cream preparation with ethanol extract of yen thuo leaves.

Stability check results

The results of the stability test of the oleptic organ of the Yen Thuo leaf ethanol extract cream did not change in color, smell, and shape. You thuo leaf ethanol extract cream was found to be stable for 5 weeks of storage. Preparations are declared stable if they do not change color, smell and shape (Draelos, 2006).

The result of measuring the pH of the preparation

The results of measuring the pH of the ethanol extract cream preparation of yen thu leaves with observations for 5 weeks showed that the pH of the ethanol extract cream preparations of yen thou leaves did not decrease. The pH of the preparation was determined using a pH meter. The test results on the pH of the cream preparations obtained show that the cream preparations produced are in accordance with the pH of the skin and can be used safely and do not cause irritation to the skin because according to Balsam and Sagarin (1972), the pH of cream preparations suitable for skin pH is between 5 to 8 .

CONCLUSION

The results of the stability test of the oleptic organ of the Yen Thuo leaf ethanol extract cream did not change in color, smell, and shape. You thuo leaf ethanol extract cream was found to be stable for 5 weeks of storage. The preparation is declared stable if it does not change color, smell and shape. The results of measuring the pH of the ethanol extract cream preparation of yen thu leaves with observations for 5 weeks showed that the pH of the ethanol extract cream preparations of yen thou leaves did not decrease. The pH of the preparation was determined using a pH meter. The test results on the pH of the cream preparations obtained show that the cream preparations produced are in accordance with the pH of the skin and can be used safely and do not cause irritation to the skin because according to Balsam and Sagarin (1972), the pH of cream preparations suitable for skin pH is between 5 to 8 The results of macroscopic examination of Yen leaf simplicia

powder were carried out using an organoleptic method, namely the powder is faded green in color, has a slightly bitter taste and has a characteristic odor. Results of microscopic examination of simplicia powder.

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