



## Potency of West Sumatra Plants As Traditional Medicine

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### ABSTRACT

**Introduction:** Indonesia is a tropical region known as a source of raw materials for medicines that can be used to treat various diseases. For the people of West Sumatra, there are many ways to use medicinal plants.

**Objective:** To find out medicinal plants that can be efficacious in West Sumatera that have many pharmacological activities.

**Methods:** The method used was a literature study. Data sources came from research journals on the efficacy of plants that originated in West Sumatra from various national and international sources. The data search strategy used was to search directly for gray literature through the Google search engine and use the Google Scholar, Pubmed and Science Direct databases. Inclusion criteria included national journals on the efficacy of sungkai plants with Sinta accreditation 1-6, and Scopus indexed international journals with Q1-Q4 rankings. Exclusion criteria included journals that did not focus on discussing the efficacy of plants as immunostimulants, unaccredited journals, and research journals with review methods.

**Results:** From the national and international journals that have been reviewed, it was found that there are many plants that grow in West Sumatra have many pharmacological activities.

**Conclusion:** Plants that grow in West Sumatra have many pharmacological activities that can provide benefits to the surrounding community and can be developed into medicinal preparations that are easier for the community to consume.

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### I. INTRODUCTION

Indonesia is a tropical region known as a source of raw materials for medicines that can be used to treat various diseases. Likewise, the largest user of medicinal plants in the world is Indonesia along with other countries in Asia, such as India and China [1].

Natural plant products have been used throughout human history for various purposes. In fact, written records of the use of herbal medicine date back more than 5,000 years, and for much of history, herbal medicine was the only medicine. Today, plants are being used to treat a number of health concerns and conditions, including allergies, arthritis, migraines, fatigue, skin infections, wounds, burns, gastrointestinal issues and even cancer - proving that it's true that food is medicine. These herbs are less expensive and they're a safer means of treatment than conventional medications, which is why so many people are choosing to go back to this traditional idea of medicine [2].

For the people of West Sumatra, there are many ways to use medicinal plants. Some use all parts of the plant and some take only certain organs. The presentation is also like boiled, smeared and others. One type of medicinal plant can treat several diseases and there is one type of medicine that can only treat one type of disease. So there are various kinds of traditional medicines and how they are used in West Sumatra.

Traditional medicine is the nation's cultural heritage that needs to be preserved and developed to support health. Traditional medicine plays a very large role in public health services in Indonesia, therefore traditional medicine has the potential to be developed. Indonesia has many medicinal plants because Indonesia has the second largest biodiversity after Brazil. Although there are many plants that can be used as medicinal ingredients, they have not been maximally utilized by the people of Indonesia [3]. According to (Syukur and Hernani, 2003), 74% of wild plants in the forests and the remaining 26% have been cultivated [4]. Of those that have been cultivated, more than 940 species are used as traditional medicine.

People in Indonesia have a high interest in the use of traditional medicine as it is believed to boost the

immune system. The highest use of traditional medicine is the people of West Sumatra Province with 53 thousand people, while in Papua the number of users is only around 630 people [5]. Some medicinal plants that are often used by the community as traditional medicine are mengkudu (*Morinda citrifolia* L.), mahkota dewa [(*Phaleria macrocarpa* (Scheff.) Boerl)], and sungkai (*Peronema canescens* Jack).

Traditional medicine in Indonesia can be grouped into three major groups: "Jamu," "Obat Herbal Terstandar" (OHT), and "Fitofarmaka". The three groups are recognized from scientific evidence availability, i.e., practical experience for "Jamu," pre-clinical trials for OHT, and clinical trials for "Fitofarmaka" [6]. The development and utilization of traditional medicine in Indonesia are supported by 30,000 types of plants and animals that can be used as medicine, and 300 of them have been formulated into herbal medicine from generation to generation. Until now, Indonesia already has 23 "Fitofarmaka" products [7]. The plants most widely used in the manufacture of herbal medicine include *Zingiber officinale*, *Alpinia galanga*, *Curcuma longa*, *Curcuma zanthorrhiza*, *Elettaria cardamomum*, *Morinda citrifolia*, *Phaleria macrocarpa*, *Strobilanthes crispata*, *Andrographis paniculata*, *Aloe vera*, etc. [8].

Commonly, traditional medicine is considered more harmless to be used than conventional medicine. Most people think that the side effects of traditional medicine are minimum [9]. Riskesdas 2018 data provide a clear picture that more than 50% of the Indonesian population have used traditional medicines or herbal medicines, both in dosage forms produced by pharmaceutical companies and home-made [10].

## II. METHODOLOGY

The method used was a literature study. Data sources came from research journals on the efficacy of medicinal plants that originated in West Sumatra from various national and international sources. The data search strategy used was to search directly for gray literature through the Google search engine and use the Google Scholar, Pubmed and Science Direct databases. Inclusion criteria included national journals on the efficacy of sungkai plants with Sinta accreditation 1-6, and Scopus indexed international journals with Q1-Q4 rankings. Exclusion criteria included journals that did not focus on discussing the efficacy of plants that originated in West Sumatra, unaccredited journals, and research journals with review methods.

## III. DISCUSSION

The leaves of mengkudu is a native plant from Indonesia that contains flavonoid compounds that have antioxidant activity so that is beneficial for the skin. Water extract of noni (*Morinda citrifolia* L.) leaves. Contains alkaloids, triterpenoids, flavonoids, and tannins. does not contain steroids, saponones, and glycosides. Serum preparations were made using a modified serum formula [11].

This research was conducted using the experimental method and used test materials for ethanol extract of the leaves of the subdued by the maceration method, formulated into serum preparations in various concentrations, namely 3%, 4%, 5% and blanks, and physical quality examination of the preparations. The results of the ph test showed a ph 6,3-6,5. Serum bath results at an F3 concentration (5%) which is the preferred (best) preparation. The results of the 6% moisture content test, the results of obtaining 10,3% leaf extract. It has antioxidant activity including the (strong) category with an IC50 value of 50,40 [11].

Testing the antioxidant activity of the ethanol extract of the leaves of mengkudu (*morinda citrifolia* L.) belongs to the category (very strong) with an IC50 value 44.27 µg / mL, the antioxidant activity of the blanks of serum preparations including the category (inactive) with an IC50 value of 676.49 µg/ mL, and all serums of this purifying leaf extract do not cause irritation to the skin [11].

Mahkota dewa fruit [(*Phaleria macrocarpa* (Scheff.) Boerl)] contains benzophenone derivatives which have sun protection activity and flavonoid compounds which can act as tyrosinase inhibitors. This study aimed to determine the tyrosinase inhibitor activity of 70% ethanol extract of Mahkota Dewa fruit and gel extract of Mahkota Dewa fruits with variations in concentrations of 1.25% (F1), 2.5% (F2), and 5% (F3) [12].

Assay of tyrosinase inhibitor activity against ethanol extract of Mahkota Dewa fruit and ethanol extract was done with various concentrations (31.25, 62.5, 125, 250, and 500 µg/mL), using a positive control of Kojic acid and L-DOPA as a substrate. Absorbance measurement was carried out using UV-vis microplate reader with a wavelength of 480 nm. The results showed that the ethanolic extract Mahkota Dewa had an IC50 value of 6668.06 µg/mL while kojic acid as a positive control possessed an IC50 value of 4.22 µg/mL. Gel preparation of the ethanol extract has inhibitor activity of the enzyme tyrosinase represent moderate values of the IC50 each, i.e., F1 (1.25%) amounted to 285.03 µg/ mL, F2 (2.5%) amounted to 373.25µg/ mL, and F3 (5%) of 397.40 µg/ mL. The tyrosinase inhibitor activity of the 70% ethanol extract of Mahkota Dewa fruit was lower with a relative potency of  $5.167 \times 10^{-3}$  times compared to that of kojic acid [12].

In Indonesia, one of the popular medicinal plants is sambiloto (*Andrographis paniculata* Nees.) [13], which has the potential to be developed into alternative therapies in increasing the body's immune system. The active compounds contained in Sambiloto act as immunomodulators, including deoxyandrographolide, andrographolide, neoandrographolide, homoandrographolide, diterpenoids, flavonoids [14], β-sitosterol,

stigmasterol [15], and polyphenols [16]. Sambiloto leaves potentially as an immunomodulator, immunostimulator, and immunosuppressor agents [14].

Sambiloto leaves tea is a mixture of green tea leaves with sambiloto leaves. The aroma of sambiloto leaves is relatively neutral with a very bitter taste [17] letting it unpopular among society. Several diseases may be cured by using sambiloto such as influenza, lung abscess, pneumonia, inflammation of the airways, fever, pulmonary tuberculosis, shortness of breath, lung tumors, and others [18]. Furthermore, research shows that green tea is beneficial for preventing cancer, osteoporosis, cardiovascular disease, and atherosclerosis [19]. To improve the taste of sambiloto leaves and food diversity, the researchers wanted to formulate a sambiloto leaves tea sweetened with natural sweeteners derived from dates and/or honey.

The purpose of this study to Sambiloto was to develop a tea formula of sambiloto leaves, analyzed the chemical properties (polyphenols, tannins, water, extracts in water, total ash, water soluble ash, water-insoluble ash, insoluble acid ash, and water-soluble ash alkalinity) as well as the antioxidant capacity of the formula [20].

This research was divided into two stages. The first stage was the formulation of sambiloto leaves tea and the second stage was the analysis of chemical properties (levels of polyphenols, tannins, water, extracts water, total ash, water soluble ash, water-insoluble ash, insoluble acid ash, and water soluble ash alkalinity) and antioxidant capacity analysis. The analysis was carried out on all of the sambiloto leaves tea formulas to determine the effect of the formulations on chemical properties and antioxidant capacity. This study used Microsoft Excel 2013 in data processing management [20].

The highest extract water was at F4, and the lowest was at F1. Based on the analysis, the formula of sambiloto leaves tea was in the range of 1.026–1.734%. Of all the formulas that have been prepared, sambiloto leaves tea formula F1 was obtained the best chemical and antioxidant properties among all formulas, which were composed of 100% sambiloto leaves, 5% honey, and 45% dates [20].

Sambiloto leaves have good antioxidant activity and can be used as a drink in the form of an infusion, such as tea. The result of brewing the sambiloto tea formula has faded green color. The polyphenol content of the sambiloto leaves tea formula still did not meet the Indonesia National Standard ( $\geq 5.2\%$ ), was 1.5–3.1% [20].

#### IV. CONCLUSIONS

Plants that grow in West Sumatra have many pharmacological activities that can provide benefits to the surrounding community and can be developed into medicinal preparations that are easier for the community to consume.

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