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The Bark Extraction of Salix Aegyptiaca L Antibacterial Activity

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Abstract: The use of plants as a source of medicine has been a part of life in the world since ancient times. Many modern pharmaceuticals are based on plant-based drugs, and they are used to treat a range of illnesses in today's society. The aim of this research was to identify alternative compounds that could be used in the production of antimicrobial compounds. It is expected that a compound that can be used as a raw material for antimicrobial agents will be discovered. Salix alba has been used as medicine for a long time. We conclude that Salix aegyptiaca bark extract can be used as a safe and effective drug for Candidiasis based on the results.

Keywords: Bark extraction, Salix aegyptiaca L, Antibacterial, Medicinal plant

INTRODUCTION

Antibiotic resistance in bacteria is a serious problem in the prevention of infectious diseases. Multidrug-resistant bacteria are currently spreading not only by nosocomial infections, but also in the population [1-2]. Enterococcus faecium, Staphylococcus aureus (S. aureus), Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa (P. aeruginosa), and Enterobacter spp. are some of the most common multi-drug resistant bacteria found, particularly in nosocomial infections [3].

Pseudomonas aeruginosa, Klebsiella pneumoniae, Escherichia coli, and methicillin-resistant Staphylococcus aureus (S. aureus) (MRSA) have all been detected in Indonesian hospitals [4-7]. Since the bacteria causing the infection is immune to first-line antibiotics, treatment options are normally substituted by a second or third-line antibiotic, which is usually much more expensive. As a result, new antimicrobial agents must be created and introduced to fight multidrug-resistant bacteria. To fix this issue, there has been a growing interest in finding antimicrobial compounds from medicinal plant extracts as a different way of discovering new antimicrobial compounds. Several countries have published on the antimicrobial properties of herbal medicines against various pathogens [8, 9].

Medicinal plants have been used to cure illnesses all over the world for thousands of years. The popularity of medicinal plants represents the acceptance of many conventional arguments about the benefits of natural products in healthcare [10]. Cassia fistula L. (Leguminosae), also known as the Golden Shower, is a semi-wild Indian Labernum found in Asia, South Africa, Mexico, China, the West Indies, East Africa, and Brazil. It's an ornamental tree with lovely yellow flower clusters.

Tribes use this plant to treat a variety of ailments, including ringworm and other fungal skin infections [11]. It is used to treat nasal infection by the Malaialis tribe in India [12]. The pulp of ripe fruits has a mild purgative effect and is also used as an antifungal agent [13].

The leaves are used to treat inflammation, the flowers are used as a purgative, and the fruit is used as an anti-inflammatory, antipyretic, abortifacient, demulcent, purgative, and refrigerant. The plant is often used to treat chest complaints, eye issues, flu, heart and liver problems, and rheumatism [14, 15, 16 and 17]. It is useful in treating haematemesis, pruritus, eucoderma and diabetes [18]. Its extract is also recommended for pest and disease control [19, 20, and 21] in addition to its pharmacological uses. Cassia fistula exhibited substantial antimicrobial activity and properties that justify its folkloric use as a broad-spectrum antimicrobial agent in the treatment of some diseases [22]. Traditional people use the entire plant to treat diarrhea, the seeds to treat skin diseases, and the flowers and fruits to treat skin diseases, fever, abdominal pain, and leprosy [23].

White willow bark has been used as an antipyretic and analgesic all over the world. Willow bark has been out of favor since the invention of synthetic acetylsalicylic acid in the 1890s, and it has never been subjected to extensive scientific testing. Salicin concentrations in willow bark are much lower than in other Salix plants. Willow bark contains a high concentration of tannins (8-20%), which causes gastrointestinal toxicity before therapeutic salicylate concentrations are reached. Willow bark has not been investigated for use in preventing colorectal cancer, strokes, or myocardial infarctions because it does not seem to impair coagulation. Its use as a topical analgesic and wart remover appears to be effective. To reduce the risk of Reye's syndrome, avoid willow bark in children with influenza or varicella, as well as patients with asthma, aspirin allergies, active peptic ulcer disease, diabetes, or hepatic or renal disorders. There are no trials that have been performed to determine its protection during pregnancy or lactation.

Historical and Popular Uses

The white willow bark was used by ancient Egyptians to relieve pain and inflammation. Willow bark was prescribed by Hippocrates and Dioscorides as a treatment for gout and rheumatic joint diseases, but it fell out of favor in Europe during the Middle Ages. Kuan-Yin, the compassionate bodhisattva, is often portrayed holding a willow branch as a healing sign. Willow was also used by Native American healers for its analgesic properties. Medical botany: plants that influence man's health, Lewis, W.H. Wiley, New York, 1977. In 1763, English clergyman Edward Stone rediscovered the healing properties of willow bark. Willow bark has been used to treat rheumatic pain, back pain, toothaches, headaches, and menstrual cramps, among other ailments. It is also used to relieve sore throat, fever and headache associated with upper respiratory tract infections and influenza Friend D. [24,5 and 26] .Willow's active chemical constituent, salicin, was identified in 1829 by the French pharmacist H. Leroux Hedner T, Everts B. The early clinical history of salicylates in rheumatology and pain.

Clinical Rheumatology, vol. 17, no. 1, pp. 17-25, 1998. In 1838, an Italian chemist produced salicylic acid in its purest form. Wintergreen, spirea, and other plants were also used to extract salicylic acid. Salicin and salicylic acid were commonly used by European physicians in the 19th century to treat rheumatic fever, as well as as an antipyretic, gout cure, and analgesic, particularly for joint pain. . However, the high doses (8-10 grams per day) often induced vomiting and gastric discomfort, so a less noxious salicylate was found. Acetylsalicylic acid was first synthesized in 1853 by a French chemist, and was rediscovered in the 1890s by Felix Hoffman at the Bayer Company in Germany, who developed it from the spiric acid (aspirin) contained in meadowsweet. Bayer Aspirin quickly became one of the most popular drugs sold worldwide.

Synthetic acetylsalicylic acid is now used to avoid myocardial infarctions, strokes, and colorectal cancer, in addition to being an analgesic and antipyretic. To obtain these same advantages, some herbalists recommend willow bark extract as a natural replacement for aspirin. Willow bark is often combined with aspirin in Germany to improve beneficial effects while minimizing side effects. The European Scientific Cooperative on Phytotherapy (ESCOP) has approved willow bark extract to treat fever, pain, and mild rheumatic complaints [27].

DISCUSSION

Both Willow (Salix) species are useful, and the majority of them can be used interchangeably. Salix nigra is the source of Willow Bark Extract (Black Willow). Black Willow is a small tree native to southeastern North America's moist woodlands and stream edges. The bark is astringent and strong in salicin and other astringent compounds. Salicin is the source of salicylic acid. Willow bark has been used by herbalists for centuries and is said to have analgesic, antiseptic, astringent, anti-pyretic, and anti-inflammatory properties. Willow bark extract is also used as a herbal pain reliever and anti-inflammatory and analgesic agent today. Willow bark extracts are used as a natural source of salicylic acid in cosmetics.

With age, the skin's natural rate of exfoliation slows, resulting in a build-up of dry, dull skin flakes. Willow Bark Extract has been shown to improve stratum corneum turnover more effectively than synthetic salicylic acid while causing minimal irritation.

Willow Bark Extract was found to be non-irritating to the skin in a Repeat Insult Patch Test, also at a concentration of 100%, equivalent to 10% synthetic salicylic acid.

Willow Bark Extract has antimicrobial properties and can be used as part of a preservative scheme for cosmetic formulations when used at concentrations of 2.5 percent to 5.0 percent.

Willow Bark Extract has been shown to have powerful antimicrobial properties in vitro. The extract has activity against Staphylococcus aureus and Propionibacterium acnes, two of the skin flora implicated in the development of acne, according to efficacy testing. When applied to cosmetic formulations, the extract will boost the ability of the formulations to regenerate cells. Willow Bark Extract, with its salicylic acid-like constituents, can produce effects close to those of synthetic salicylic acid, but it is non-irritating, unlike synthetic salicylic acid. Willow Bark Extract is a safe way to get the benefits of a ß-hydroxy acid without the risk of irritation.

Synthetic salicylic acid has been shown to improve skin cell turnover at concentrations of 0.5 percent to 1.0 percent in cosmetic formulations. This cell regeneration is followed by an increase in the skin's overall appearance. Fine lines and wrinkles are reduced as a result of the smoothing effect. However, even at a low concentration of 1%, synthetic salicylic acid can cause some drying and irritation. According to a study issued by the Society of Forensic Dermatology. Willow bark extract offers the advantages of salicylic acid, such as exfoliation and antimicrobial activity, without the irritation that comes with it. As a result, willow bark extract has the same effects as synthetic salicylic acid without the disadvantages.

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