

# Formulation and Evaluation of Herbal Antiseptic Liquid Containing Antimicrobial Property

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## Abstract

Traditional therapies, including the use of dietary components for wound healing and skin regeneration, are very common in Asian countries such as China and India. The increasing evidence of health-protective benefits of phytochemicals, components derived from plants is generating a lot of interest, warranting further scientific evaluation and mechanistic studies. Herbal products are becoming more familiar among consumers as a healthier, organic, beneficial and economically responsible option.

Herbal Product may have less or negligible side effect compare to synthetic product. The herb we used in the formulation of herbal antiseptic liquid is *Tridax procumbens* L. Plants have been it is used to treat wound *Tridax Procumbens* L. works fast to heal the wound after applying. *T. procumbens* possesses a wide spectrum of biological activities. The ethyl acetate extract of this plant showed strong allopathic and paracidal activities. In pharmaceutical activities, methanol and ethanol extracts exhibited anti-hyperglycemic, antifungal anti-leishmanial and hepatoprotective activities while ethyl acetate extracts exerted antiinflammatory, anti-cyclooxygenase, and antioxidant activities. The acetone extract of this herb obtained anticoagulant, anti-hepatic, antibacterial activities. [11]

Over the last decade, there has been a huge increase in acceptance and public interest in natural therapy in both developing and developed countries and these herbal medicines are now available, not only in drug stores but also in supermarkets and food stores. These phytochemical compounds have been shown to be lead compounds for the development of new synthetic compounds, with higher efficacy and lower toxic side effects. Phytochemical studies showed that the *T. procumbens* is a rich source of flavonoids with a percentage of flavones and flavanones most commonly present in the Asteraceae family. They are responsible for antioxidant, hepatoprotective, anticancer, antibacterial, wound healing properties. In addition, flavonoids play an important role to control the growth of toxin producing bacteria in plants.

**Keywords:** Ayurvedic antiseptic liquid , *Tridax procumbens* L , extraordinary parameters.

## Introduction

An antiseptic is a substance that stops or slows down the growth of microorganisms. They're frequently used in hospitals and other medical settings to reduce the risk of infection during surgery and other procedures. If you've ever witnessed any type of surgery, you probably saw the surgeon rubbing their hands and arms with an orange-tinted substance. This is an antiseptic. Different types of antiseptics are used in medical settings. These include hand rubs, hand washes, and skin preparations. Some are also available over the counter (OTC) for home use. [10] Herbal Antiseptic Liquid Natural antiseptic herbs are used to kill or inhibit the growth of microorganisms when applied to living tissue or skin. It kills or inhibits the growth of microorganisms on the external surfaces of the body. Antiseptic Medicinal Herbs reduces the possibilities of infection, sepsis, or putrefaction. Antiseptic liquid is used to disinfect the surface. It is used to healing wound. Herbal Product is becoming more popular among consumers as a healthier, organic, beneficial and economically responsible option. [8] India's are witnessing a paradigm shift from traditional method of using home product to modern method of using branded cosmetic. India's proactive FMCG market as seen the significant growth in the cosmetic market account for the major part of the cosmetic market with an average growth of 20% per annum. Approximately 80 percent of people in Africa and other developing nations still depend on traditional herbal remedies to treat ailments due to their easy availability and lower cost compared to synthetic compounds. [8] *Tridax procumbens* (L) is a medicinal plant which shows antimicrobial property. In this study, we evaluated antiseptic liquid which is used to heal the wound. It is best known as a widespread weed and pest plant. It is native to the tropical Americas including Mexico but it has been introduced to tropical, subtropical, and mild temperate regions worldwide. [9] Traditionally, *Tridax procumbens* has been in use in India for wound healing and as an anticoagulant, antifungal, and insect repellent. *Tridax procumbens* Linn. Strongly proved for its

Anti-inflammatory and Analgesic activity in animal studies it is also used as a treatment for boils, blisters, and cuts by local healers in parts of India. [9]

**Advantages:** Preventing infections on the skin, particularly for cuts, scrapes, or minor burns, Dry hand-washing, which healthcare workers may do between different procedures or patients, Cleaning the skin before a medical procedure, such as a blood draw or surgery, Cleaning mucous membranes, to treat infections or before using a catheter, Infection control practices and aid in the prevention of nosocomial infections

**Disadvantages:** Some strong antiseptics can cause chemical burns, Severe irritation if applied to skin without being diluted with water, Can cause irritation if they're left on skin for long periods of time, This kind of irritation is called irritant contact dermatitis, Poisonous.

Avoid using OTC antiseptics for more serious wounds, such as: Eye injuries, Human or animal bites, Deep or large wounds, Severe burns, Wounds that contain foreign objects These are all best handled by a doctor or urgent care clinic.

**Side Effects:** Signs of an allergic reaction, like rash; hives; itching; red, swollen, blistered, Peeling skin with or without fever, Unusual hoarseness.

*Tridax Procumbens* Plant *T. procumbens* is a little green color plant having perennial, 15–40 cm high, roots arising at the nodes stems procumbent arising from woody base, hairy, leaves ovate to lanceolate petiole 4–30 mm long. It has two types of flowers ray florets and disk florets with basal placentation 3–6, tubular at the base with pale yellow or cream-white ligules, 2.5–5 mm long, 2–5 mm wide, the disk of corollas yellow. The Flavonoid Procumbenetin has been isolated from the aerial parts of *Tridax procumbens*. Other chemical compounds isolated from the plant include alkyl esters, sterols pentacyclic triterpenes fatty acids, and polysaccharides. Several main active chemical compounds were found to be present. But toxicological knowledge is scarce and more research described to be needed on this plant. [9]

## Materials and Methods

Ingredients	Uses	Quantity		
		F1	F2	F3
Tridex Procumbens	Antiseptic , antibacterial	2.74ml	2.74ml	2.74ml
Sodium chloride	Non-irritating and Non-drying	2.5gm	2.5gm	2.5gm
Sodium Lauryl Sulfate	Cleaning agent	0.3gm	0.4gm	0.35gm
Propylene Glycol	Solvent	1.25ml	1.25ml	1.25ml
Methyl Paraben	Preservative	0.02gm	0.02gm	0.02 gm
Distilled water	Solvent	Q.S.	Q.S.	Q.S.
Carboxyl Methyl Cellulose	Protective colloid, stabilizer	0.3gm	0.3gm	0.2gm
Ethanol	Bactericidal activity	2 ml	2 ml	2 ml

### Method of preparation:

**Extraction:** 1. Took 11 gm of crude drug i.e. Tridex Procumbens dry Powder into RBF. 2. Added 250ml of ethanol and the mixture fixed into the extraction assembly. 3. Extraction took place by continuous heating process i.e. soxhlet extraction with temperature maintains between 60 oC to 70oC. and extraction runs till the color of the extract was faded then filtered by Whatman filter paper to remove impurity.

### Method of preparation of herbal antiseptic liquid:

1. Took extract. 2. Triturated Sodium chloride, Sodium lauryl sulphate, Propylene Glycol, Carboxyl methyl cellulose make a fine powder with the help of mortar and pestle. 3. The above powdered was dissolved in 5ml distilled water. (Sol. 1) 4. Took of Methyl Paraben dissolved it into 2 ml of ethanol. (Sol. 2) 5. Mixed Sol.1 and Sol.2 into extract stir well until the homogenous liquid phase appear and make up volume up to 25 ml with distilled water. 6. Transferred formulation in well labeled tightly closed container.

### Evaluation

The appearance of formulated herbal antiseptic liquid was judged by following methods.

#### 1. Analysis of isolated Flavonoid procumbenetin:

Procedure: The Standard sample and test sample was examining by SHIMADZU UV- 1780 UV-VIS SPECTROPHOTOMETER.

**2. Visual Observation:** Procedure: Examine the formulated liquid by naked eye.

**3.pH of formulation:** The pH measured by the help of EQUIPTRONICS Digital pH meter Model EQ-610.

**4. Viscosity:** The viscosity measured by Ostwald's viscometer apparatus.

**5. Density:** The Density is measured by Density bottle.

#### 6. Antimicrobial Study:

Procedure: The antimicrobial activity of the formulation and extract was determined by using the modified agar well diffusion method. Against Gram-positive (Staphylococcus aureus NCIM 2654) bacterial pathogen with slight modifications. For further study, the respective test pathogen suspension was prepared in sterile saline then pathogen was spread on the surface of sterile Muller and Hinton agar plates using a sterile spreader for the antimicrobial activity test. After that, an agar well was created using a 0.7 cm diameter sterilized cork borer. Then 100 µl of extract and formulation of the extract were added aseptically into the respective well. Then plates were placed at 4 °C for 10 min for sample diffusion in a culture medium and transferred to an incubator at 37 °C for 24 h. Furthermore, the diameter of the inhibition zone was measured in mm and the results were recorded and compared against standard antibiotic streptomycin which was the concentration of 100µg/ml.

### Results

UV method is used to check the purity of the isolated compound which is of 84 % and is matching with the standard value of purity.

**Visual Observation:** Yellowish transparent homogeneous liquid.

Results of test of pH, viscosity and density of Antiseptic liquid formulation.

Formulation	pH	Viscosity (cp)	Density (g/ml)
F1	6.92	6.5	1.06
F2	6.86	6.51	1.04
F3	6.99	6.5	1.05

## Antimicrobial Study:

Antimicrobial activity of the Extract and formulation against respective test pathogens in mm

Sr. No	Formulation	Test Organisms	Zone of inhibition of respective compounds in mm			
			Extract	Formulation	Ethanol	Streptomycin
1	F1	<i>S.aureus</i>	21	30	0	23
2	F2	<i>S.aureus</i>	21	30	0	25
3	F3	<i>S.aureus</i>	21	27	0	24

Obtained results state that the Extract and formulation show good antimicrobial activity against test pathogen i.e. Staphylococcus aureus (NCIM 2654) but the formulation shows extra activity than the crude extract and standard antibiotic streptomycin.



## Discussion

Flavonoid procumbenetin was isolated from Tridax procumbens. UV method is used to check the purity of the isolated compound which is of 84 % and is matching with the standard value of purity. Flavonoid procumbenetin containing antiseptic liquid was formulated and the color was yellowish transparent homogeneous liquid and had a cosmetically applied appearance and it was homogeneous with no indication of two phase formation. Formulated antiseptic liquid was easily spreadable with healing property and acceptable bio adhesion. The pH of the skin normally ranges from 4 to 6 and the pH of the formulated liquid was found to be 6.9 at room temperature. Antimicrobial activity of extract and formulation show good antimicrobial activity against test pathogen i.e. Staphylococcus aureus (NCIM 2654) but the formulation shows extra activity than the crude extract and standard antibiotic streptomycin.

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