

## ANTIMICROBIAL ACTIVITY OF CALOTROPIS PROCERA

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### ABSTRACT

Calotropis procera, collectively known as milkweed tree, is a plant native to India and Pakistan. It is a goliath, thistle-like plant that can grow up to 10 feet tall. The plant has smooth sap and white, fragrant flowers. Compositions of the leaves, bark, and plant parts have long been used as prescriptions for the treatment of various problems including fever, excitement, and agony.

The antimicrobial activity of *C. procera* is recognized to be the result of various compounds secreted in the plant including cardenolides, flavonoids and alkaloids. Cardenolides are a type of cardiac glycoside that has been shown to have antimicrobial activity. Flavonoids are a group of plant extracts with a wide range of regular activities, including antimicrobial activity. Alkaloids are a social group of nitrogen-containing compounds found in many plants, and some alkaloids have been shown to have antimicrobial activity, respectively.

Antimicrobial activity of *C. procera* has been shown in various assays. In a review, an ethanolic concentrate of the leaves of *C. procera* S. was shown to be active against a variety of microorganisms including aureus, *E. coli* and *P. aeruginosa*. Thus the pack was shown to be active against clear parasites including *C. albicans*. In another setting, the methanolic concentration of *C. procera* bark was used to treat *S. procera*. was shown to be active against a variety of microorganisms including aureus, *E. coli*, and *P. aeruginosa*. The concentration was also shown to be active against specific new developments, including *C. albicans*.

**KEYWORDS: Antimicrobial, Activity, Calotropis, Procera**

### INTRODUCTION

*C. Antimicrobial activity of Procera* has been similarly shown in vivo. In an audit, *S. aureus*-infected mice were treated with an ethanolic concentrate of *C. procera* leaves. The treatment was assured in reducing the number of microorganisms in the course framework of the rats. In another review, rats infested with *E. coli* were treated with a methanolic concentrate of *C. procera* bark. The treatment was also possible to reduce how many small animals were in the mice's circulatory system. (Kumar, 2015)

The antimicrobial activity of *C. procera* is a promising finding. The plant can be used to help new antimicrobial experts who are confident against various microorganisms and progress. Further evaluation should request the antimicrobial activity of *C. procera* and specific compounds in the plant bound for activity.

Despite its antimicrobial activity, *C. Procera* is indicated for other relatively common activities, including easing up, antipyretic, and pain associated with activity. The plant has been used in traditional medicine for a long time to treat a variety of issues, and an assortment of anecdotal evidence shows that the plant holds varying potential consistent benefits.

*Calotropis procera*, commonly known as the milkweed tree, is a plant native to India and Pakistan. It has been used in specific prescriptions for a really wide time period to treat various issues including impurities. (Amin, 2018)

Recently, there has been interest in the moderate antimicrobial activity of *C. procera*. Various evaluations have shown that concentrations derived from the leaves, bark, and roots of the plant can inhibit the growth and development of various microorganisms.

A study published in the journal "Phytotherapy Assessment" found that *C. procera*. An ethanolic concentrate of *Procera* leaves solid regions for gram-positive and gram-negative animal levels, including *Staphylococcus aureus*, *Escherichia coli*, and *Pseudomonas aeruginosa*. The concentrate was also convincing against the common constituent *Candida albicans*.

Another survey, published in the journal "Journal of Ethnopharmacology," found that a methanolic concentrate of *C. procera* bark was effective against *S. aureus*. It was effective against a range of microorganisms including *aureus*, *E. coli* and *Salmonella typhi*. The concentrate was also effective against the parasite *Aspergillus fumigatus*.

These evaluations suggest that *C. procera* may have potential as a brand name serum toxin and systemic potent antifungal. In any case, further review should reflect these revelations and select the best assessment and strategy for the alliance. (Huang, 2012)

Despite its antimicrobial activity, *C. Procera* has thus been shown to have a number of different potential clinical benefits, including coordination, new developments to compromise malabsorption and against the effects of diabetes. In any case, more major evaluation is needed to fully appreciate the general clinical benefits of this plant.

*C. Procera* is a particularly adaptable plant that can live in a variety of places, including dry savannas, wet boondock districts and, incredibly, metropolitan areas. It is a pioneer zoological assemblage, suggesting that it was probably the first plant to colonize the disturbed area. This makes it a fundamental plant for reform, the coordinated effort by which plant and animal relationships change over time.

*C. Procera* are a basic source of food and a safe home for specific animals. The leaves are eaten by a variety of insects, including caterpillars, gnats, and grasshoppers. Chicks are a source of nectar for bumblebees, butterflies and various pollinators. The seeds are eaten by birds and nimble warm-blooded animals. (Rao, 2010)

Milkweed tree is correspondingly involved by individuals for different purposes. The leaves and roots are used to make various standard prescriptions, and plastic from the stems can be used to make gum. The wood of the tree is used to make furniture, cases and various things.

*C. Procera* is a fundamental plant expected to play a large role in various standard systems. A pioneer organism helps colonize disturbed areas, and it provides food and safe space for a variety of animals. The milkweed tree is other than being cultivated by individuals for different purposes, including standard prescriptions and furniture making.

#### **ANTIMICROBIAL ACTIVITY OF CALOTROPIS PROCERA**

Despite its generally expected importance, *C. Procera* is likewise an exceptionally rich plant. It is prized for its massive, prominent blooms and its attractive foliage. The milkweed tree is an attractive choice for completion in tropical and subtropical regions. (Morsy, 2010)

Regardless, *C. procera* can be seen in similarly clear areas. It can spread quickly and crowd out neighboring plants. At times, it has become a bothersome problem especially in the area where it has been introduced beyond its reach.

all together. *Procera* is a huge plant with both natural and cash benefits. At any rate, it is important to have a lot of familiarity with what is apparent in the apparent local potential.

The pharmacological forays of *C. procera* have been used to treat a variety of human contaminations, including colds, fever, dyspepsia, potency, asthma, dyspepsia, dermatitis, elephantiasis, splitting of the intestine, loose bowels and skin Weaknesses are included. The metabolites under consideration in *C. procera* are committed to the persistent properties of the cardiotoxic plant.

The leaves of *C. procera* similarly yielded normal low blood sugar levels, showing their antihyperglycemic potential. Although the pharmaceutical and current motivations behind the plant have attracted a surprising amount of attention, little attention has been paid to the plant's common and standard properties.

Furthermore, the harmful bioactivity relationship of *C. procera* has not been considered in aggregate, which is in fact too vast to research its helpful properties. Evaluating these key centers may help make *C. procera* more economically viable and free it up for new applications. Also, filling these data gaps may help to gain greater knowledge of its observable methodology for acting and managing real future biodiversity or possibly general issues.

New antimicrobial systematics are needed to create barriers to pathogenic microorganisms for existing antimicrobials. The use of stronger plants as a substitute for a brand name, persuading trained experts to eliminate drug safety is a fundamental evaluation area. Inspectors really need to consider the adequacy of plants rather than living things.

Some activities have been attributed to *C. procera*, including antibacterial, antifungal, and antitumoral, reflecting the estimated genetic range of this class. In a continuous survey, the phytochemical constituents of *C. procera* ethanolic isolated from the leaves were considered. Of these, 39.36% were  $\alpha$ -amyrin esters, recommending that they were found in *C. procera*. Marker for *Procera* can be given.

Lupeol fatty acids, phytol, hexadecanoic acid, stigmaterol, and linoleic acid were also observed. The relentless pursuit of various compatible plants for bioactive potential has generated interest in bioactive far reaches of their soil containing microorganisms.

GC-MS investigation of the bacterial concentrate showed the three planned substances were similarly detected in leaf disposal, but their overall concentrations were higher in the bacterial concentrate, suggesting that microbial affiliations account for significant extraocular fractions made in plant tissues.

## RESULTS AND DISCUSSION

*Calotropis procera* (Sodom apple) is an individual from the plant family Asclepiadaceae, growing to about 6 m tall and generally scattered in various parts of West Africa and infested areas. The plant is erect, tall, vigorous, very tall and enduring with smooth plasticity. In India, the juice from the root bark is commonly used to treat skin problems, intestinal atony, and gastrointestinal worms.

In some plant and animal cells, including human cells, *C. procera* causes unprecedented virulence. Thus, unique plant parts, especially plastics, have been tried against various compromised cell lines. Basically, the antibacterial and anthelmintic properties of the plant are being broken down into pharmacology. On the other hand, the bioactivity relationship to the risk of *C. procera* cannot be specifically assessed in the end. As shown by some assessments, the plant causes acute cardiotoxicity and hepatotoxicity.

Table 1: Antibacterial properties of *Calotropis procera* latex and leaf extracts using the paper disc method

Test Organisms	Zone of inhibition (mm)					
	Aqueous extract		Ethanol extract		Chloroform Extract	
	Leaf	Latex	Leaf	Latex	Leaf	Latex
<i>E. coli</i>	2.8c	4.5c	6.5c	9.0d	3.5c	6.5d
<i>S. aureus</i>	1.0a	3.5b	8.0d	10c	2.0a	5.0c
<i>S. albus</i>	1.6b	2.8a	3.5b	7.0bc	2.5b	3.3a
<i>P. aeruginosa</i>	I	I	2.0a	6.5b	2.0a	3.6ab
<i>S. pyogenes</i>	I	I	3.5b	5.5a	2.0a	3.7ab
<i>S. pneumoniae</i>	1.5b	3.0a	4.0bc	7.5b	2.5b	4.0b

Values followed by different letters along each vertical column are significantly different by Duncan's Multiple Range Test ( $P < 0.005$ )  
 Key: - = No inhibition

Table I showed that ethanol was the best soluble for the separation of antimicrobial substances from this plant which appeared to separate with respect to chloroform and water. A wider zone of restriction (9.0 mm) was shown by the ethanolic concentrate of *C. procera* plastic, while the value for chloroform and water dropped to 8.5 and 6.0 mm when specifically tried against a comparison living organism.

Table 2: Antifungal properties of *Calotropis procera* latex and leaf extracts

Test Organisms	Zone of inhibition(mm)					
	Aqueous Extract		Ethanol Extract		Chloroform Extract	
	Leaf	Latex	Leaf	Latex	Leaf	Latex
<i>A. niger</i>	1.5a	4.5a	3.5b	8.5c	2.5b	6.5d
<i>A. flavus</i>	1.0a	4.1a	3.0b	7.2b	3.0b	6.8b
<i>C. albicans</i>	I	I	4.6c	8.2c	4.1c	7.0b
<i>M. bouldardii</i>	I	I	1.2a	2.5a	1.0a	2.0a

Values followed by different letters along each vertical column are significantly different by Duncan's Multiple Range Test ( $P < 0.005$ ); Key = No inhibition

The results of antifungal activities (Table 2) showed that ethanolic and chloroform concentrations of both leaf and plastic *C. procera* exerted a significant effect against *A. niger* with the loosest zone of limitation of 8.5 mM against the four tested cultures by ethanolic concentrations. Shown. Of plastic In any case, *Candida albicans* and *Microsporum bouldardii* were not forced by liquid concentrations of both the plant leaf and the plastic.

The journey is on for environmentally innocuous models to override incredibly distributed drugs. Of necessity, some assessments have been made on plant species represented in common diagnostic structures.

The prospective results of this study showed that the hydroethanolic concentrate of *C. procera* leaves critical solid areas for demonstrated activity against *Candida albicans* and *Aspergillus fumigatus* and has a broad exposure to the standard regimen, ketoconazole, antifungal solution. In addition, *C. procera* killed gram-positive microorganisms *S. procera. aureus* and Gram-negative moment in living animals. *pneumoniae* isolates and showed strong antibacterial activity against gentamicin, an aminoglycoside that threatens microbial confidence against various other pathogenic organisms. Previous evaluations on the antipathogenic activity of methanolic concentrates of *C. procera* leaves have shown its true limitation against *S. aureus* and *S. typhi*.

The ability of the plant concentrate to suppress or disturb the progress of pathogenic microorganisms with promiscuous ability reflects the presence of bioactive discretionary metabolites that have been observed as antimicrobials by informed experts.

*C. procera*, as a brand name concentrate, was isolated in the bone marrow and liver cells of mice to restrict the genotoxicity of CP. The results showed that pretreatment with *C. procera* significantly reduced the degree of chromosomal turns and DNA breaks provoked by CP. This activity may be the result of some of the bioactive discretionary metabolites detected in the GC-MS evaluation of *C. procera* leaf isolates, for example,  $\alpha$ -amyrin, lupeol acidic dextrose repens and linolenic acid.  $\alpha$ - and  $\beta$ -amyryns have been documented to have antitumor, coordination and cell support properties.

Nature has long been the source of persistent experts and an extraordinary number of current remedies have been isolated from traditional sources, originally selecting their use in standard medicine. Various antibacterial specialists have been found and it coordinates antibacterial systematic specialists similar to penicillins (from *Penicillium* species), cephalosporins (from *Cephalosporium acrimonium*), aminoglycosides, disease regimes and polyketides (from all *Streptomyces* species); specialists with immunosuppressive mechanisms similar to those of cyclosporine and rapamycin (from *Streptomyces* species); Cholesterol-lowering agents such as mevastatin (Compactin) and lovastatin (from the *Penicillium* species) have previously been employed; As well as anthelmintic and antiparasitic drugs, for example, ivermectin.

*Calotropis procera* has a broad extra strong field for the treatment of leucoderma, confusion, ulcers, elevations, and diseases of the reserves, spleen, liver and groin. The plant has been analyzed phytochemically for cardenolides, anthocyanins, hydrocarbons and triterpenoids and addressed to show various pharmacological activities, for example, cardio tonic, hepatoprotective, antimicrobial and anticarcinogenic as well as vanity.

Separate plates were made with groups of 10, 9, 5, 4.5, 4, 2.75, 2.5, 2, 1.25, 1, 0.5, 0.025 and 0.005 $\mu$ g/10 $\mu$ l and *Bacillus cereus* to determine the antibacterial activity of *Calotropis procera*. was applied against. It has been resolved that different leaves showed different antibacterial activity at different concentrations. There was no effect on bacterial growth at 4.5 and 0.5  $\mu$ g OBS.

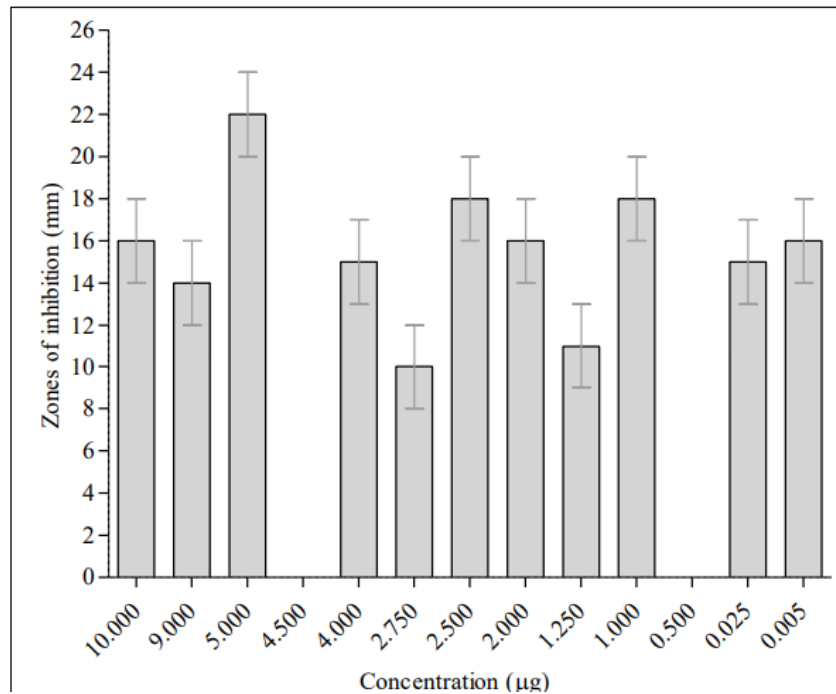


Figure 1: Antimicrobial activity of *Calotropis procera* against *Bacillus cereus*

The most nonspecific effect was obtained when 5 µg of leaf kills was used against *Bacillus cereus* with an area of  $22 \pm 2$  mm, while minimal activity was obtained at 2.75 µg with an area of  $10 \pm 2$  mm. When this dose was increased to 9 µg and 10 µg, there was no significant improvement in inhibitory zone. It has been postulated that the leaves of *Calotropis procera* can be used in part to control *Bacillus cereus* deposition in vivo at a concentration of 5 µg/ml in the blood.

Separate plates were titrated with concentrations of 10, 9, 5, 4.5, 4, 2.75, 2.5, 2, 1.25, 1, 0.5, 0.025 and 0.005 µg/10 µl to selectively determine the antibacterial activity of *Calotropis procera* Applied against *Pseudomonas aeruginosa*.

It has been accepted that leaves kill showed different antibacterial activity at different focus. There was no effect on bacterial improvement at the 2, 1.25 and 0.5 µg concentrations. The most noticeable effect was achieved when using 5 µg of foliar eradication against *Pseudomonas aeruginosa* with an area of  $22 \pm 2$  mm, while the most effective at 1, 4 µg with an area of  $12 \pm 2$  mm was achieved. Low activity received. Well when the fraction was increased to 9 µg and 10 µg, there was no drastic increase in the area of the border. It is thought that the leaves of *Callitropis procera* can be used in part to control *Pseudomonas aeruginosa* contamination in vivo at concentrations up to 5 µg/ml in the blood.

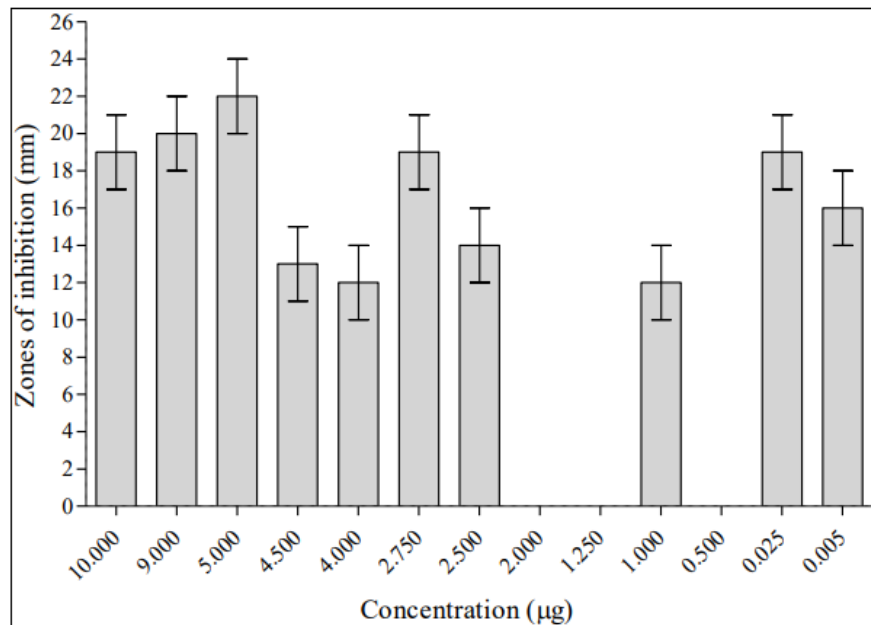


Figure 2: Antimicrobial activity of Calotropis procera against Pseudomonas aeruginosa. Different plates with concentrations of 10, 9, 5, 4.5, 4, 2.75, 2.5, 2, 1.25, 1, 0.5, 0.025 and 0.005µg/10µl were conducted and assayed to select the antibacterial activity of Calotropis procera against Proteus mirabilis implemented. It has been thought that different leaves showed different antibacterial activity at different passages. There was no effect on bacterial growth at 9, 5, 2, 0.5 and 0.025µg concentrations.

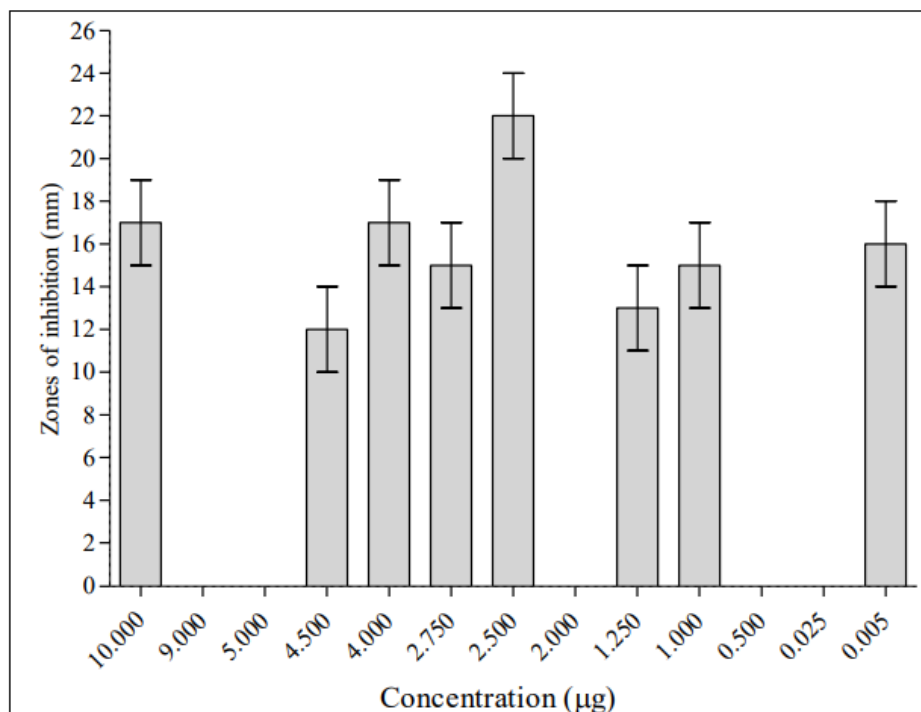


Figure 3: Antimicrobial activity of Calotropis procera against Proteus mirabilis

The most pronounced effect was obtained when 2.5 µg of leaf discard was used against *Proteus mirabilis* with an area of 22 ± 2 mm, while the least activity was obtained at 4.5 µg with an area of 12 ± 2 mm. Certainly when the fragment approached 10 µg, there was no central expansion in the region of the border. It has been common that the leaves of *Calotropis procera* can be used piece by piece which can achieve a concentration of 2.5 µg/mL in the blood to control *Proteus mirabilis* infestation in vivo.

## CONCLUSION

As shown by the disclosure of consecutive reviews, C. Flavonoids of *Procera* showed antimicrobial activities against pronounced human pathogenic bacterial and potent strains. As needed these common things can be used as new biorational tools for the treatment of solid contaminations or to overcome the issue of microbial protection from compound vaccination specialists to extraordinary general antimicrobial specialists with new or changed strategies for activity may allow for improvement. More substantial evaluations on the toxicological properties of flavonoids and in vivo confirmation of their alternative effects will be key to a full evaluation of their significant rest in the field of present-day medicine.

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