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STUDY OF PSORIASIS TREATMENT USING TRADITIONAL MEDICINE

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ABSTRACT:

The aim of the present study was to evaluate the antimicrobial activities of aqueous extract of leaf of *Argemonemexicana*and root of *Alangiumsalvifolium*.The aqueous leaf extracts of *Argemonemexicana*were subjected to qualitative tests, by screening of phytoconstituents that present in the extracts, and to quantitative tests by evaluation of antimicrobial activity using well agar diffusion method. The aqueous root extract of *Alangiumsalvifolium*was prepared and were tested on Gram positive bacteria. Agar cup plate test was used to determine the sensitivity of the tested samples while the well microdilution was used to determine the minimum inhibitory concentration. The drug extract were extracted using solvent extraction by soxhlet apparatus, different concentration of these extract were prepared ranging 0.1-1.0mg/ml and antimicrobial activity is performed on *Staphylococcus aureus* (gram positive) bacteria using nutrient agar medium as broth. It was found that the above drug combination (*Argemonemexicana, Alangiumsalvifolium*)on the respective gram positive bacteria (*Staphylococcus aureus*) was showing significant antimicrobial activity . The minimum inhibitory concentration of combination of both drugs was found to be **6.1mm** for the concentration of **4:6 mg/ml** for both drugs. The overall results of this study indicates that the extract from both the drugs have interesting antimicrobial and potential free radical scavenging activity for treatment of psoriasis disease.

Keywords: *Alangiumsalvifolium (L.F.)*wang, *Argemonemexicana L.*,MIC:Minimum inhibitory concentration ,Streptococcus aureus , psoriasis disease .

INTRODUCTION:

Traditional medicine shares a major part in healthcare system of developing countries[1]. The dependence on traditional medicine is due to its cost effectiveness and more accessible nature[2]. India officially recognizes over 3000 plants for their medicinal value. It is generally estimated that over 6000 plants in India are in use in traditional, folk and herbal medicine, representing about 75% of the medicinal needs of the Third World countries[3]. The plants, *Alangiumsalifolium*and *Argemonemexicana*are some of those plants which consists of various activities like antimicrobial, antibacterial, antioxidant and anti-inflammatory activities, etc. These drugs are useful to treat skin diseases like dermatitis, psoriasis, rosacea and acne. Psoriasis is a chronic inflammatory disorder of the skin and joints. The current prevalence in India is estimated to be between 1% and 3%. The usual presentation is with welldemarcated red plaques with an overlying scale. The clinical features of psoriasis, welldemarcated, erythematous scaly plaques, are explained by the histological features. Common sites affected include the scalp, buttocks, elbows, knees and nails.

Alangiumsalvifolium(L.f) Wang belongs to family Alangiaceae. Locally it called as Ankolam[4].

Alangiaceae is a monogeneric family of trees and shrubs found in tropical and subtropical region.

Recent phytochemical studies of this plant resulted in the isolation of several flavanoids, phenolic compound, irridoid glycosides and oxyoglucoside. Methanolic extract of root has been studied for its analgesic and antiinflammatory activities in animal model[5]. The aerial part of the plant was analyzed and compounds were isolated from chloroform extract employing chromatographic technique[6]. New alkaloid, ankorine was isolated from leaves[7] . Plant is rich in tetrahydroisoquinoline monoterpene

glycoside, for e.g., alangiside-1 or ipecoside2 whose structures are closely related to the ipecac alkaloid [8]. Two sterol alangol (m. p. 296°) and alengol (m. p. 302-307°) were isolated from seed kernels [9]. Root is used in diarrhea, paralysis, piles and vomiting [10]. They are acrid, astringent, emollient, anthelmintic, thermogenic, diuretic and purgative. Root is useful for external application in acute case of rheumatism, leprosy and inflammation and internal application in cases of bites of rabbit and dogs [11].Large-sale alterations of skin microbial communities have been linked to several on-infectious diseases, such as atopic dermatitis, psoriasis, rosacea and acne .

*Argemonemexicana*L., known as Ghamoya (class: MagnoliopsidaDicotyledons; subclass: Magnoliidae; order: Papaverales; family: Papaveraceae; Figure 1) is an exotic weed indigenous in South America but has widespread distribution in many tropical and sub-tropical countries including West Africa. Most of the isolated compounds belong to the class of alkaloids; besides, terpenoids, flavonoids,phenolics, longchain aliphatic compounds, and few aromatic compounds are found to be other constituents of this plant. [12] *A. mexicana*is considered as an important medicinal plant in India; the yellow juice, which exudes when the plant is injured, has long been used in India as traditional medicine for dropsy, jaundice, ophthalmia, scabies and cutaneous affections. Different parts of this plant are used in chronic skin diseases, and also as emetic, expectorant, demulcent and diuretic; the seeds and seed oil are employed as a remedy for dysentery, ulcers, asthma and other intestinal affections. Leaves and seeds are also reported to find application in maintaining normal blood circulation and cholesterol level in human body; these plant parts possess anti-venom property as well. Flowers are found to be expectorant and have been used in the treatment of coughs. Seeds of the plant are used as purgative, laxative and digestive while its latex is used against conjunctivitis.

The plant selected for study was based on its availability and its various therapeutic activities in various ailments mentioned in Ayurveda. In the present work, we have reported for the first time the results of the combined investigation of both drug concentrations as combination.

MATERIAL AND METHODS:

For the study, roots of *Alangiumsalvifolium* and leaves of *Argemonemexicana* were selected. The roots of *Alangiumsalvifolium* and plant of *Argemonemexicana* were procured from local area of Gondia. The plant of *Alangiumsalvifolium* and *Argemonemexicana* was authentified by Dr. M.V. Kawle, D.B.Science College Gondia.

Preparation of *AlangiumSalvifolium* Extract: Preparation of the extract of powdered roots is done using distilled water. The shade dried coarse powder of the roots (500gm) was packed well in soxhlet apparatus and was subjected to continuous hot extraction with distilled water until the completion of the extraction. The extract was filtered while hot and the resultant extract was distilled in vacuum under reduced pressure in order to remove the solvent completely. It was dried and kept in a desiccator till experimentation. Obtained extract was weighed practical yield and percentage yield was calculated in term of air dried powdered crude material [13,14,15].

Preparation of *Argemonemexicana* Extract :Collected leaves were washed thoroughly under running tap water. It was dried on tissue paper for three days at room temperature. Further it was crushed properly using electric grinder and 200 ml of distilled water was added to the leaves powder to make water extract by shaking for 48 hours using electric shaker. Filtration and centrifugation of the extract yielded a phytochemicals residue which was dried in vacuum oven at 40 °C for full night.

Powder Analysis And evaluation of drug extract

- *Alangiumsalvifolium*
- Colour: - Brownish red
- Odour: - Characteristics
- Taste: - Bitter

The extractive values of *A.salvifolium*root was 4.6 % w/w with aqueous solvents. The extracts did not show any fluorescence. It gave positive tests for phytosterols, triterpenes, flavonoids, carbohydrates and alkaloids. The extract was free from glycosides, saponins, tannins, proteins and amino Acids.

- Loss on drying (% w/w) :- 12.8
- Total ash (% w/w) :- 2.84
- Acid-insoluble ash (% w/w) :- 1.24
- Water-soluble ash (% w/w) :- 0.8
- Fluorescence analysis :- No fluorescence

✞*Argemonemexicana*Colour: - Brownish red

Odour: - Characteristics

Taste: - Bitter

It gave positive tests for alkaloid, flavonoid, carbohydrate, tannins.

1) Average moisture contents :- 9.7 % w/w
2) Ash-value :- 8.5% w/w
3) Acid-insoluble ash :- 4.5% w/w
4) Alcohol-soluble extractive :- 8.0% w/w
5) Water-soluble extractive value :- 15.0 % w/w

To Perform Antimicrobial Activity of *Alangiumsalvifolium* **and** *Argemonemexicana* **Extract**

Procedure for antibacterial activity (Welldiffusion pour plate method) This method depends on the diffusion of the various extracts from a cavity through the solidified agar layer of petri dish, to an extent such that growth of the added micro-organism is prevented entirely in circular area or zone around the cavity containing the extracts. 0.2 ml of each of the seeded broth test organism was inoculated in the sterilized agar media. Sterilize the cup-borer of 10 mm diameter by dipping it in alcohol followed by flaming it and make four wells, one in each quadrant, at equal distance in nutrient agar plate previously seeded with culture. Add different concentration of extract which are previously prepared into the wells. Incubate it at 37 degree Celsius for 24 hour, check the zone of inhibition.

Test Organism: - staphylococcus aureus (gram+ve) bacteria obtained from department of microbiology DhoteBandhu Science College, Gondia.

Drug procured from the college:-

- Nutrient Agar (for bacterial cultivation)
- 12-15 Hours young culture of microorganism
- Standard marketed preparation of drug
- Different concentraton of drug extract
- Sterile petri plates and cork borer
- Dimethyl sulphoxide solution
- Incubator and laminar air flow cabinet

Well - diffusion using pour plate method :- Agar media was prepared and autoclaved. 500 *µ.lit*. of inoculum was added in 250 mlof media under aseptic condition and then media was poured in petriplates. After the medium was solidified wells were bored with help of sterile borer. The pH was adjusted between 7.8-8.0

Sample preparation:- For the preparation of test sample of extract solvent used for dissolution, 100 mg drug extract was dissolved in 100 ml of Dimethyl sulphoxide and filtered. The sample in the form of solution then used for determination of antimicrobial activity.0.1, 0.2, 0.3, 0.4, 0.5,

0.6, 0.7, 0.8, 0.9, 1.0 mg/ml conc. were prepared, standard preparation of ointment were taken in 1mg/ml concentration.

After that, to each plate one boar filled with 0.3 ml of standard preparation. (5 boar in one plate, total 6 plates). To that other boar, 0.3 ml of test (drug-1) concentrations are filled in conc. 0.1, 0.2, 0.3, respectively up to 1.0 mg/ml in clockwise direction. Similarly (drug-2) concentrations are filled in boars. The sensitivity of test organism to each extract was indicated by clear zone of inhibition around the wall and the diameter of zone of inhibition was measured the test positivecontroland negative control was performed in duplicate

RESULT:

In the present study, aqueous extract of *Argemonemexicana*leaves and *Alangiumsalvifolium*roots showed significant antimicrobial activity against *Staphylococcus aureus* bacteria(gram positive),which is supported by another study which carried out previously. The results of this study suggest that aqueous extract of *Argemonemexicana*and *Alangiumsalvifolium*may serve as an alternative to synthetic antimicrobial which might have significant applications in treatment of psoriasis disease.

Antimicrobial activity study: -It was found that the above drug combination (*Alangiumsalvifolium*, *Argemonemexicana*) on the respective gram positive bacteria (*Staphylococcus aureus*) was showing significant antimicrobial activity, and the minimum inhibitory concentration of drug *Alangiumsalvifolium* was found to be **5.0 mm** for the concentration of **0.4mg/ml** .The minimum inhibitory concentration of the drug *Argemonemexicana* was found to be **3.8 mm** for the concentration of **0.6 mg/ml**. The minimum inhibitory concentration of combination of both drugs was found to be **6.1 mm** for the concentration of **4:6mg/ml**.The minimum inhibitory concentration of standard was found to be **7.1mm** for the concentration of **0.5 mg/ml.** The minimum inhibitory concentration of blank was found to be **0.4mm** for the concentration of **1ml DMSO solution**.

The antimicrobial activity was determined by measuring the diameter of zone of inhibition . Table 1. : - Antimicrobial Activity of *Alangiumsalvifolium*

Sr.no.	Concentration (mg/ml)	Diameter of the Inhibitory zones (mm)
1.	0.1 mg/ml	4.2 mm
2.	0.2 mg/ml	4.5 mm
3.	0.3 mg/ml	4.8 mm
4.	0.4 mg/ml	5.0 mm
5.	0.5 mg/ml	4.9 mm
6.	0.6 mg/ml	4.7 mm
7.	0.7 mg/ml	4.6 mm
8.	0.8 mg/ml	4.8 mm
9.	0.9 mg/ml	4.6 mm
10.	1.0 mg/ml	4.5 mm

Table 2. : - Antimicrobial activity of *Argemonemexicana*

Sr.no.	Concentration (mg/ml)	Diameter of the Inhibitory zones(mm)
1.	0.1 mg/ml	-
2.	0.2 mg/ml	-
3.	0.3 mg/ml	3.3 mm
4.	0.4 mg/ml	3.5 mm
5.	0.5 mg/ml	3.7 mm
6.	0.6 mg/ml	3.8 mm
7.	0.7 mg/ml	3.6 mm
8.	0.8 mg/ml	3.7 mm
9.	0.9 mg/ml	3.5 mm
10.	1.0 mg/ml	3.6 mm

Due to maximumzone of inhibition of above drug was found to be 0.4mg/ml for*Alangiumsalvifolium* and 0.6 mg/ml for *Argemonemexicana*;That's why we choosed 0.4 and 0.6 mg/ml concentration of drug to use as in combinations.(12 plates for each combination i.e. 2 and 12 plate for standard drug)

Table 3:- Antimicrobial activity of both drug combinations in ratio of 0.4mg/ml(Alangiumsolvifolium) : 0.6mg/ml(Argemonemexicana):-

Sr.no.	Concentration (mg/ml)	Zone of Inhibition
1.	0.4mg/ml + 0.6 mg/ml	5.2 mm
2.	0.4mg/ml + 0.6 mg/ml	5.3 mm
3.	0.4mg/ml + 0.6 mg/ml	5.5 mm
4.	0.4mg/ml + 0.6 mg/ml	5.7 mm
5.	0.4mg/ml + 0.6 mg/ml	5.7 mm
6.	0.4mg/ml + 0.6 mg/ml	5.9 mm
7.	0.4mg/ml + 0.6 mg/ml	5.8 mm
8.	0.4mg/ml + 0.6 mg/ml	5.9 mm
9.	0.4mg/ml + 0.6 mg/ml	6.0 mm
10.	0.4mg/ml + 0.6 mg/ml	6.1 mm
11.	0.4mg/ml + 0.6 mg/ml	5.9 mm
12.	0.4mg/ml + 0.6 mg/ml	5.8 mm

Table 4:- Antimicrobial activity standard concentration:-

Sr.no.	Concentration (mg/ml)	Zone of Inhibition
1.	1.0 mg/ml	6.4 mm
2.	1.0 mg/ml	6.7 mm
3.	1.0 mg/ml	6.9 mm
4.	1.0 mg/ml	7.1 mm
5.	1.0 mg/ml	7.0 mm
6.	1.0 mg/ml	6.8 mm

Table 5:- Antimicrobial activity of mean of inhibitory zones for Blank:

Sr.no.	Concentration (mg/ml)	Zone of Inhibition
1.	0.1 ml DMSO	0.4 mm

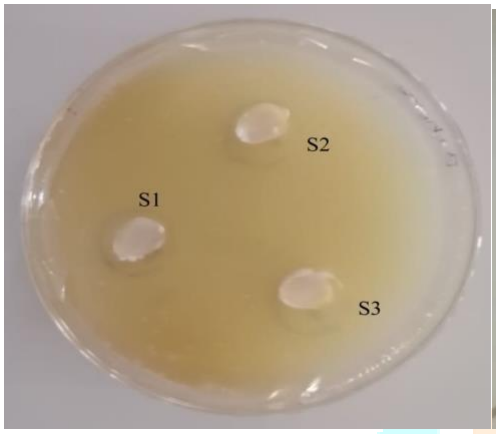

Fig. Standard Preparation

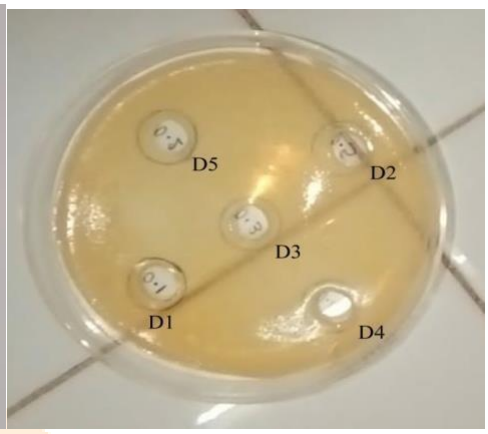

Fig. Drug Combination

DISCUSSION:

The present study deals with an up-to-date review on the chemistry and pharmacology of Argemone*mexicana* and *Alangiumsalvifolium*, a useful medicinal plant finding applications in indigenous system of medicines. The antimicrobial activity showed by the leaves of *Argemonemexicana* can be attributed to the presence of alkaloids, terpenoids, steroids, carbohydrates, long-chain aliphatic alcohols & carboxylic acids while roots of *Alangiumsalvifolium*include alangine, ankorine, tubulosine, alangicine, salsoline, etc. The present study on ability of the roots of *Alangiumsalvifolium*showed satisfactory property. Some of the solvent extracts of the roots studied showed antimicrobial activity even at higher rate of concentration. Previous report on antioxidant ability of the plant was conducted from roots and flowers[16] reported significant antioxidant property of the plant. Pharmacological and clinical studies of different chemical constituents of above plant are found to be very promising, which calls for more systematic research of this medicinal plant and its active principles; more in-depth and extensive studies in all relevant aspects are still warranted. We do anticipate that the present overview would boost the on-going development in this direction.

CONCLUSION:

Both the compound (1 and 2) showed significant antimicrobial activities against all of the test organisms.

Minimum inhibitory concentration was found to be within 0.1-1.0 mg/ml for bacterial species like *S. aureus*, *S.pyogenes*, (gram positive bacteria); from which 4:6 mg/ml combination shown great inhibition against microorganism. This concentration can be used in order to protect skin damage caused by psoriasis.Thus it can be concluded that the combination of the both drug can be used in the treatment of psoriasis as antimicrobial agent.

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