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EXTRACTION, ANTIMICROBIAL ACTIVITY AND PHYTOCHEMICAL OF *CLERODENDRUM VISCOSUM*

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Abstract

Clerodendrum plant is believed to be very useful in many countries for treating various health disorders ."in this study was undertaken to assess antimicrobial activity of ethanol and aqueous extracts of clerodendrum plant". Display my alcoholic extract higher inhibition of the aqueous extract all of the bacteria (Esherichia Coli , Pseudomonas aeruginosa, Bacillus subtilis). While the inhibition of the aqueous extract bacteria (Streptococcus, Shigelladysenteria) in higher alcoholic extract. However, the bacteria (Klebseillapneumoniae) did not shown any inhibition zone for both aqueous and alcoholic extracts. From the above results," it is concluded the antibacterial properties of Clerodendrum against life threatening pathogens". So, "Clerodendrum appears to be an efficient material for evolution of antimicrobial drugs".

Key words: Clerodendrum, antimicrobial activity, Phytochemical

Introduction

Medicinal plant is expensive gift from human to nature. (K. Balaji, 2014) Plants are sources for many of the chemicals used biochemical pharmaceuticals, food colors and flavors. (Leung, A.Y., 1980) Tribal communities are still in many countries use medicinal plants to treat disease. (Dhabhai, K., 2012) "Medicinal plant has been used for the treatment and different of many ailment, especially in developing countries where infectious disease are endemic and modern health services is inadequate". "Herbal medicines are safer than synthetic drugs due to phytochemicals in plant extract targeted biochemical path". (Zaidan, M.R.S., 2005) plants natural ingredients can be accessed from any part of the plant, such as flowers, leaves, roots, bark, seeds, fruits, and other. (Gordon, D.M., 2011). The consent of traditional medicine as alternative form of health care and the improvement of microbial resistance to existing antibiotic has lead researcher to inspect the antimicrobial compound. (Sumathi, Parvathi, 2010)" Plants synthesize highly complex molecules with specific stereochemistry and can appear biological activity with new modes of action". (Glime, J.M., 1991) "More than 72% of all medicinal compounds have been derived from a small fraction of the World's biodiversity". (Sarmistha Rej, 2014) "the present study was conducted to detect out *in vitro* antimicrobial activity of *Clerodendrum viscosum,* is found mainly in the tropical and subtropical regions of the world". This family is represented by herbs, shrubs and small trees known for heads, spikes or clusters of small flowers, of which many have aromatic odors. (Heywood, V.H., 2008) The family is closely related to the Lamiaceae. (Sujogya Kumar Panda, 2014) The main difference between the two families is the ovary. Lamiaceae have a deeply four lobed ovary with gynobasic style while the Verbenaceae have an unlobed ovary and a terminal style. (Mahesh, M., 2015) "Clerodendrum, an ethnomedicinally important genus is used for the treatment of various diseases". A number of researches have been performed to identify and isolate biologically active compounds from different species of Clerodendrum (Suranjana Nandi. 2015)." Research report revealed that steroids, terpenoids and flavonoids are major among them to use as a potential source for new antimicrobial substances against important pathogens of agricultural and veterinary importance". "The plant is used as a bitter tonic, dyspepsia, diabetes, asthma, malaria, lung disease, rheumatism. (Mahesh, M., 2015), (Suranjana Nandi,

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2015)" inflammatory diseases, febrifuge, fever, swelling, eye disorders, drowsiness". (Latha, M., Pari, L., 2004)" head ache, mental disturbances and bronchititis". Some of the important chemical compounds encountered in *Clerodendrum* are depicted in fig. 1.

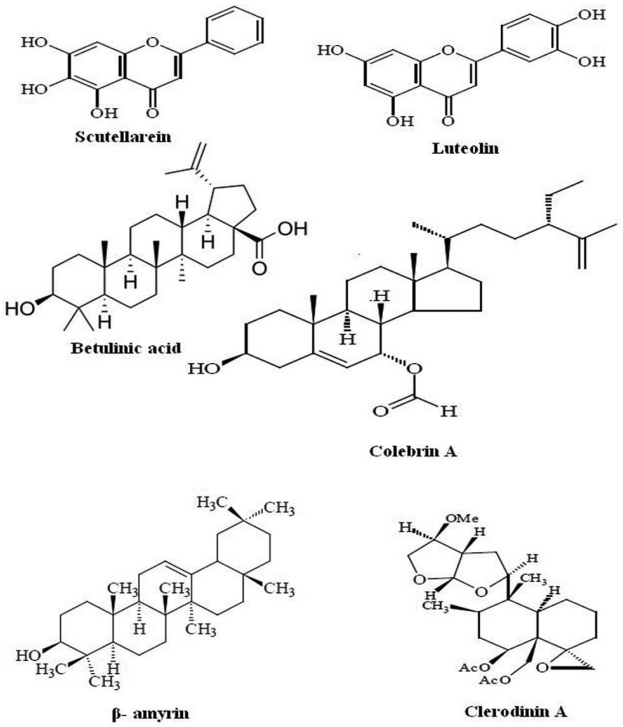

Fig. 1: Some important chemical compounds found in *Clerodendrum* (Praveen, M., 2012)

Materials and methods

Plant Material

"The whole plant of clerodendrum was collected from the place , hills area in Alalm/Salah Aldeen , cleaned and dried".

Extraction procedures

"The whole plant dried , broken into small pieces and ground, About 10 gram of ground material was extracted by 100 ml ethanol 95% or distilled water at boiling point, under reflux for 2 hr. The extractive was filtered and evaporated at 5^0C to the compete dryness".

Phytochemical evaluations

The ethanolic and aqueous extracts of clerodendrum was subjected to the qualitative chemical test for the identification of different active constituents such as alkaloids, phenolic content, carbohydrates, flavonoids, tannine, amino acid and protin (Rajaa K. Baker; 2013).

Antibacterial activity

To determine the inhibition effect of the ethanol and aqueous extracts with 1000 mg/ml concentration for clerodendrum the agar diffusion method was used. (Anonymous (2002). Equal volumes of each bacterial strain culture containing approximately 10^3 CFU/ml were applied on to Muller-Hint supplemented with ethanol and aqueous extracts. Cltures were then incubated at 37^0C for 24 hr. The inhibition Zones were measured.

Results and discussion

Phytochemical constitution

Preliminary phytochemical of Ethanol and aqueous extracts of the clerodendrum plant showed (table 1) the presents of phenolic content, carbohydrates, tannine, flavonoids. Many reports have shown that phenolic and flavonoids compaounds may significantly contribute to antimicrobial activity (Rameshkumar, A., 2012).

Antimicrobial activities of extracts

Put all of the aqueous extract and alcoholic extract

Table1: Phytochemical Analysis

Chemical Constituents	Ethanol extract	Aqueous extract
Phenolic content	+	+
Carbohydrates	+	+
Tannine	+	+
Flavonoids	+	+
Alkaloids	–	–

Table 2: ethanol extract of clerodendrum plant

Compounds	Esherichia Coli	*Pseudomonas aeruginosa*	Streptoco-ccus*espyog*	Staphyloco ccusaureus	*Klebseillapn eumoniae*	*Bacillus subtilis*	*Shigellady senteria*
1	**14**	**15**	**14**	**20**	-	**17**	-
Control	-	-	-	-	-	-	-

Table 3: Aqueouse extract of clerodendrum plant

Compounds	Esherichia Coli	*Pseudomonas aeruginosa*	Streptoco-ccus*espyog*	Staphyloco ccusaureus	*Klebseillapn eumoniae*	*Bacillus subtilis*	*Shigellady senteria*
1	**11**	**12**	**21**	**20**	-	**13**	**18**
Control	-	-	-	-	-	-	-

2010

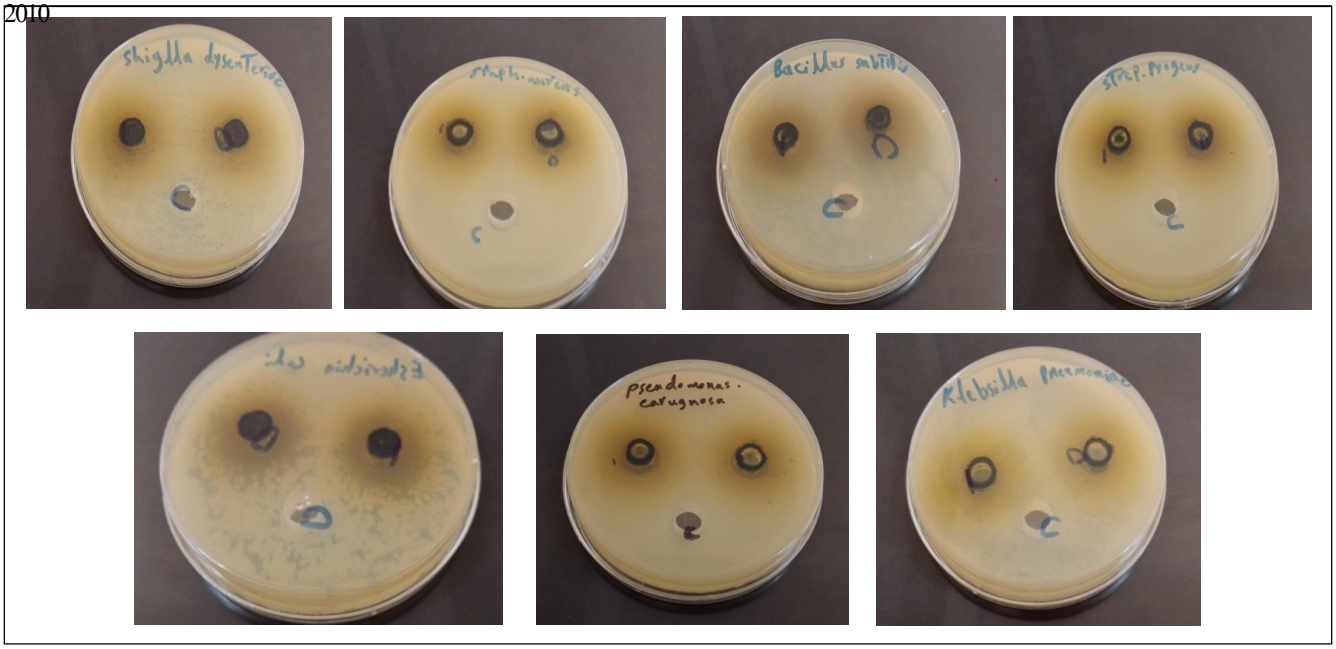

Plate 1: Inhibition zone against Bacterial strains in ethanol extract of clerodendrum plant

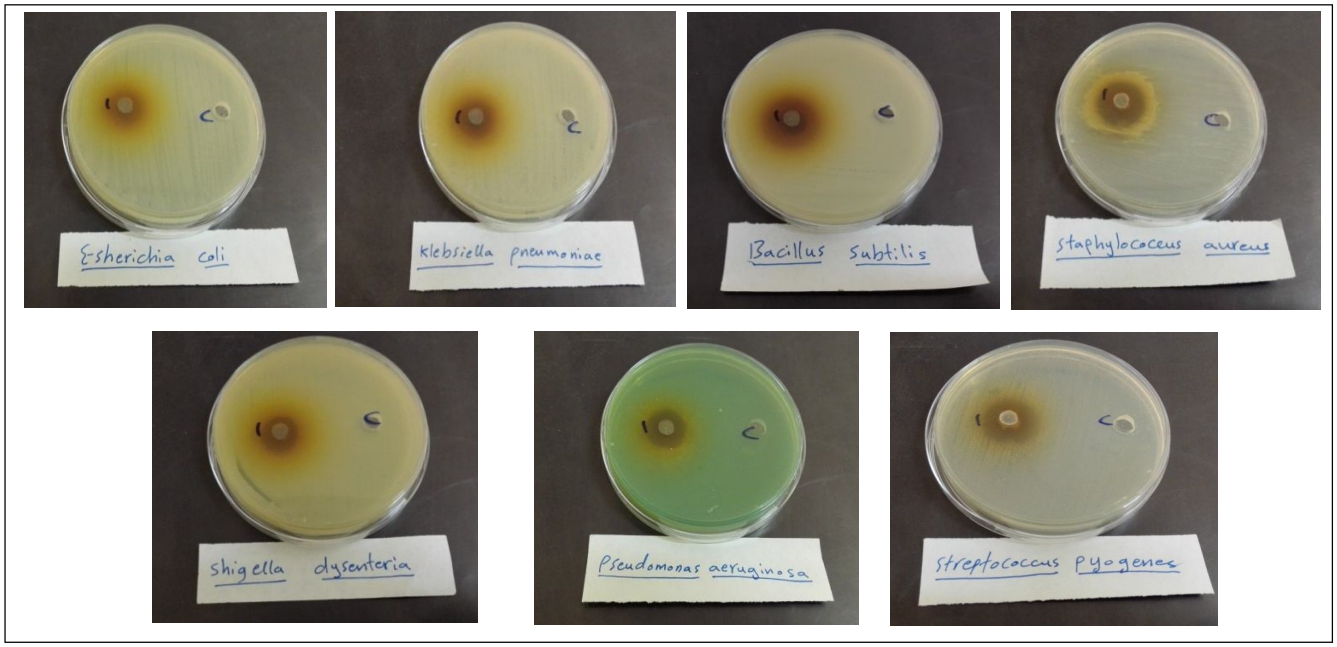

Plate 2: inhibition zone against Bacterial strains in aqueous extract of clerodendrum plant

to examine the bacteria have been seven types of bacteria, a test (Ecoli, pseu., str. p, stap., Basi, shigi., kleb.)

The inhibition zones for both extracts effective against bacterial organisms, with Display my alcoholic extract higher inhibition of the aqueous extract all of the bacteria (Ecoli, pseud., Basi) As it was the inhibition zone god (Latha, M., 2014), (Pari, L., 2002), (Praveen, M., 2012), respectively shown in (table 2). While the inhibition of the aqueous extract bacteria (Str.p, shigi) in higher alcoholic extract as she was of her inhibition zone. (Ouattara, L.; 2012), (Rajaa, K. Baker, 2013) respectively shown in (table3). The bacteria (Kleb.) did not shown any inhibition zone for both aqueous and alcoholic extracts.

Through these results we note that both aqueous and alcoholic extracts have the same efficiency in terms of biological active, shown in plate1 and plate 2.

"The antibacterial activity of the plants extracts may be attributed to the presence of bioactive compound such as phenolic, tannins and flavonoids compounds. (*Ouattara,* L., 2012)". And among these bioactive compounds, phenolics were the most effective against bacteria"

(Bydar, H., 2004)". Thus the result of antibacterial activity obtained in the present study for extracts of clerodendrun were correlated to their total phenolic contents". "Flavonoids are natural compounds found in plants, where it is believed to have a positive effects on human health". "Flavonoids also showed a wide range of antibacterial, anti inflammatory, antiviral, anticancer and anti-allergic activities" (Montoro, P., 2005).

Conclusion

"The results revealed that the antibacterial properties of Clerodendrum against life threatening pathogens. So, Clerodendrum appears to be an efficient material for evolution of antimicrobial drugs".

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