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Antimicrobial studies on extracts of *Lantana Camara*. Linn

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ABSTRACT

To study the antimicrobial activity of Lantana Camara. Linn, and its isolated constituent and also to find phytochemical constituents. The leaves of the plant under study was collected and processed for hot extraction by soxhlet apparatus using ethanol and water as solvents. From the qualitative analysis phytochemical evaluation revealed the presence of flavanoids, triterpenoids, alkaloids, and volatile oils. Its antimicrobial sensitivity testing was detected by measuring the zone of inhibition of different bacterial culture using disc plate method. Alcohol extract showed more antibacterial activity than water extract, against E.coli Bacillus aureus, Pseudomonas auroginosa, and Staphylococcus aureus. Among them these extracts have more antimicrobial activity towards E.coli. When compared with the standard gentamycin, the extract showed comparable antimicrobial activities. Phytochemical studies indicates that the presence of flavanoids, volatile oils, triterpenoids, alkaloids, and carbohydrates. Presence of triterpenoids may be responsible for the antibacterial activity. Large scale production of active constituents of Lantana Camara. Linn would be an advantageous for natural, herbal antimicrobial agents.

Key words: Arippu, Triterpenoids, Spanish flag, Lantana Camara. Linn

INTRODUCTION

Resistant bacterial strains have emerged and have spread throughout the world because of the remarkable genetic plasticity of the micro organisms, heavy selective pressures of use, and the mobility of the world population. The underlying problems are largely economic and societal, and no ready solutions are available. Hence, there is a need to explore prospective antibiotic compounds capable to control pathogens [1].Lantana Camera . Linn (Family- Verbenaceae) commonly known as wild or red sage is the widest spread species of this genus and regarded both as a notorious weed and a popular ornamental garden plant. It has become naturalised in tropical and warm regions world wide. It can be seen in the wild and along footpaths, deserted fields and farms .It has become popular in gardens for its hardy nature. It is not affected by pests or diseases have low water requirements and handles extreme heat [2]. The morphology of L.

Camara. Linn is a low erect or subscandent, vigorous shrub with stout recurved prickles and a strong odour of black currants; It is a rugged evergreen shrub from the tropics. The species will grow to 6 ft height and may spread to 8 ft in width and even some varieties able to clamber vine like to greater heights with strong root system, further it gives out a new flush of shoots even after repeated cuttings; Stems and leaves are covered with rough hairs and emit an unpleasant aroma when crushed. The small flowers are held in clusters (called umbels) that are typically 1-2 inch across. Leaf are ovate or ovate-oblong, acute or subacute, crenate-serrate, rugose above, scabrid on both sides The leaves are 2-5 inch long by 1-2 inch wide with rounded tooth edges and a textured surface; Flowers are small, usually orange, sometimes varying from white to red in various shades and having a yellow throat, in axillary heads, almost throughout the year. Flower color ranges from white to yellow, orange to red, pink to rose in unlimited combinations, in addition the flowers usually change in color as they age; Inflorescences are compact, dome-shaped, 2-3 cm across, and contain 20-40 sessile flowers. Fruits are small, greenish-blue black, blackish, drupaceous, shining, with two nuts, almost throughout the year, dispersed by birds. Seeds germinate very easily [3, 4]. It is a favourite species of the flies and used in butterfly gardens in U.S. It is used as ornamental plants, anti-inflammatory, anti malarial, wound healing, abortifacient and wound healing purposes. In Ayurveda a decoction of fresh roots are a good gargle for odontalgia and this is used by hill tribes for all types of dysentery, powdered leaves are used for cuts, wounds, ulcers and swellings, an infusion of the leaves are good for bilious fever. The phytoconstituents isolated from the plant are flavanoids, triterpenoids, alkaloids, and volatile oils. Among them triterpenoids provide antimicrobial activity [4].

MATERIALS AND METHODS

2.1 Plant materials:

The leaves of Lantana Camara were collected from kottayam district of kerala, which was authenticated at department of botany; Baseliios college, Kottayam. Shade dried leaves were coarsely powdered and subjected to successive solvent extraction by continuous hot extraction (soxletapparatus) using solvents like water and alcohol. Then the extracts were concentrated by evaporation and the yield was calculated.

2.2 Preliminary phytochemical screening:

The concentrated extracts were subjected to various chemical tests to detect the presence of different chemical constituents like flavanoids, volatile oils, triterpenoids, alkaloids, and carbohydrates [5 -7].

2.3 Antimicrobial screening:

The micro organisms used as test organisms were obtained from MLT department, SME Puthupally, kottayam district Kerala. E.coli, Pseudomonas aureus (Gram negative) staphylococcus aureus, Bacillus aureus (Gram positive) bacteria. The media used for the growth of bacteria was Inueller Hinton agar. For the study of antimicrobial activity, gentamycin discs 10 µgm were used as control.

Evaluation of antimicrobial activity was performed by cup plate method. Inueller Hinton agar plates were prepared by pouring the sterilized media in sterile Petri plates under aseptic conditions. The test organism 0.1 ml was spread on agar plates. Cups were made at the size of 5mm diameter in the agar plates using the sterile borer. Drug solvent control and standard were added into the pores separately. The plates were maintained at +4° C for 24hr. This method depends on the diffusion of the various extracts from a cavity through the solidified agar layer of

Petri dish. Strains sensitive to be antimicrobial are inhibited at a distance from the disc where as resistant stains have smaller zones of inhibition or grow up to the edge of the disc. [8].

RESULTS AND DISCUSSION:

Alcoholic and aqueous extracts of *Lantana camara* showed significant activity against *E.coli* and moderate activity against other microbes. Alcoholic extracts showed more bacterial activity than water extracts. When compared with standard; the extract produced comparable zone of inhibition of different bacteria culture (Table 1)

Table 1: Antimicrobial activity of *Lantana Camara Linn* in different microbial culture

Test media	E. Coli		Staphylococcus aureus		Pseudomonas aureus		Bacillus aureus	
	Inhibition zone(mm)	MIC(μ g/ml)	Inhibition zone (mm)	MIC(μ g/ml)	Inhibition zone(mm)	MIC(μ g/ml)	Inhibition zone(mm)	MIC(μ g/ml)
Gentamycin	20mm	10 μ g/ml	19mm	10 μ g/ml	22 mm	10 μ g/ml	23 mm	10 μ g/ml
Alcoholic extract	18mm	100 μ g/ml	15mm	150 μ g/ml	19 mm	150 μ g/ml	17 mm	160 μ g/ml
Water extract	17mm	150 μ g/ml	14mm	200 μ g/ml	16 mm	190 μ g/ml	16 mm	210 μ g/ml

Phytochemical screening of the alcoholic extracts revealed the presence of alkaloids, carbohydrates, volatile oils, triterpenoids, and flavanoids. Presence of triterpenoids may be responsible for the antibacterial activity [9- 12].

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