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MEDICINAL ATTRIBUTES ON FEW SPECIES OF OXALIDACEAE

Sirigiri Chandra Kala*

Department of Botany and Microbiology, Acharya Nagarjuna University, Guntur 522510, Andhra Pradesh, India.

ABSTRACT

Medicinal plants have been used in traditional health care systems since prehistoric times and are still the most important health care source for the vast majority of the population around the world. Use of medicinal plants extracts as traditional drugs to heal the human ailments is a common practice since thousands of years in many parts of the world. The natural products derived from medicinal plants have proven to be an abundant source of biologically active compounds many of which have been the basis for the development of new lead chemicals for pharmaceuticals. Despite advancement in synthetic chemistry, we still depend upon biological sources for a number of secondary metabolites including pharmaceuticals and family Oxalidaceae is one of the very important medicinally significant biological sources but ignored and less studied. Moreover complex structural features of their secondary metabolites are very difficult to synthesize. In fact medicinal plants still remains as thriving source of life-saving drugs for the large majority of people worldwide. During the past two decades, remarkable progress in medicinal plants research such as chemical characterization, biological, pharmacological activity of the plants was witnessed. The present study, short review was done to make a focus on importance of phytochemical, antimicrobial and pharmacological activities of family Oxalidaceae in curing the human ailments.

Key words: Oxalidaceae, Phytochemical, Antimicrobial, Pharmacological.

INTRODUCTION

Nature has been a source of medicinal compounds for thousands of years and an impressive number of modern drugs have been isolated from natural sources mostly based on their use in traditional medicine. Phytochemicals, which possess many ecological and physiological roles, are widely distributed as plant constituents. Plants have provided a source of inspiration for novel drug compounds as plants derived medicines have made significant contribution towards human health.

The use of medicinal plant in modern medicine suffers from the fact that though hundreds of plants are used in the world to prevent or to cure diseases, scientific evidence in terms of modern medicine is lacking in most cases.

Almost every species of medicinal plant contains more than one active compound and it is necessary to know the composition before other studies are being undertaken. Phytochemical and pharmacological studies help in discovering alternative source of therapeutic chemicals of importance. Medicinal plants still remains as thriving source of life-saving drugs for the large majority of people treating health problems (Chandra Kala., 2014). During the past two decades, remarkable progress in medicinal plants research such as chemical characterization, biological, pharmacological, and toxicological activity of the plants has been witnessed (Sakthivel *et al.*, 2012). However, recent evidences from the pharmaceutical companies' shows that for some complex diseases, natural products still represent an extremely valuable source for the production of new chemical entities (Calixto *et al.*, 2005).

Corresponding Author

Sirigiri Chandra Kala

Email: kala.siri2008@gmail.com

Oxalidaceae

The plant list includes 2,248 scientific plant names of species rank for the family Oxalidaceae.

Oxalidaceae is a small annual plant, growing throughout the tropical regions of South Asia, Africa and Madagascar. Normally it is growing in shady places, under the trees. It is an annual herb that grows at the foot hills of the Himalayas around the Eastern Nepal.

Medicinal Importance

Members of family Oxalidaceae have a number of medicinal uses. *Averrhoa carambola* is one of the important plant in Oxalidaceae family. The plant used for ayurvedic medicine like anti-helminth, antimalarial, antipyretic, digestive tonic, febrifuge, antiscorbutic and antidote for poison (Gheewala *et al.*, 2012). *Oxalis corniculata* (Changeri) is one of the important drugs used in siddha and Ayurvedic systems of medicine for the treatment of dyspepsia, piles, anaemia and skin diseases (Mary *et al.*, 2001).

Phytochemicals

Leaf extract of *Oxalis corniculata* was studied for its phytoconstituents such as alkaloids, steroids triterpenoids, glycosides, tannins, flavonoids and their carbohydrates and cardiac glycosides using different phytochemical tests (Raghavendra *et al.*, 2006). The aerial parts of *Oxalis corniculata* and *Oxalis latifolia* have flavonoids, phytosterols, diterpenes which may be responsible for many pharmacological activities. The presence of flavonoids in the methanol extract of *Oxalis corniculata* might have contributed to its antioxidant and anti-inflammatory (Sakat *et al.*, 2010) activities.

Antimicrobial activity

Previous reports on some Oxalidaceae species revealed the efficiency of these species antimicrobial agents. *Averrhoa bilimbi* leaves extract acts as an effective antibacterial agent against *Escherichia coli*, *Staphylococcus aureus* and *Salmonella enteritidis* and fruit extract showed antibacterial activity against of *Aeromonas hydrophila*, *Escherichia coli*, *Klebsiella pneumoniae*, *Saccharomyces cerevisiae*, *Staphylococcus aureus*, *Streptococcus agalactiae* and *Bacillus subtilis* was tested. The fruit extracts of *Averrhoa bilimbi* have good inhibitory activity against the tested pathogens when compared with the standard antibiotic, streptomycin (Anitha *et al.*, 2011).

Leaf methanol extract of *Oxalis corniculata* showed significant antibacterial activity on *Xanthomonas*, *Proteus mirabilis*, Citro bacter species, *Klebsiella pneumoniae*, *E.coli*, *Staphylococcus aureus*, *Streptococcus faecalis*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Salmonella paratyphi*, *Salmonella typhimurium*, *Shigella boydii*, *Shigella flexneri* and *Shigella sonnei* (Raghavendra *et al.*, 2006). Leaf methanol extracts of *Oxalis corniculata* exhibits more antimicrobial activity against *S.aureus* and *E.coli* (Handali *et al.*, 2011).

Averrhoa carambola fruit was showed antimicrobial activity against Gram positive bacteria *Staphylococcus aureus*, *Bacillus cereus* and three Gram negative bacteria like that *E.coli*, *Pseudomonas aeruginosa* and *Streptococcus typhimurium* (Gheewala *et al.*, 2012).

Pharmacological Activity

The ethanolic extract of *Averrhoa bilimbi* fruit has significantly increased the antiatherogenic index and HDL-cholesterol/total (Pushparaj *et al.*, 1999). Pushparaj *et al.*, 2000 has investigated the hypoglycemic activity of an ethanolic leaf extract of *Averrhoa bilimbi* Linn. Leaves were used in streptozotocin (STZ)-diabetic rats. The hypoglycemic and hypolipidemic activity of purified fractions of leaf extract of *Averrhoa bilimbi* was reported in high fat diet (HFD)-streptozotocin (STZ)-induced diabetic rats (Benny *et al.*, 2005). The antihyperlipidaemic properties of *Averrhoa bilimbi* fruit was also studied ((Savithri *et al.*, 2009).

The presence of flavonoids in the methanol extract of *Oxalis corniculata* may be contributed to its antioxidant and anti inflammatory activities (Sakat *et al.*, 2010) and antibacterial, antifungal, wound healing, cardio relaxant, nematocidal activities (Anil kumar *et al.*, 2010). *Averrhoa carambola* is one of the species of Oxalidaceae that have shown more pharmacological activities like anti-helminth, antimalarial and antipyretic properties (Gheewala *et al.*, 2012). It is highly valuable species, with impressive range of medicinal uses.

Medicinal plants play a vital role for the development of new drugs. Recently several authors have made pharmacological studies on different plant parts (Arumugam *et al.*, 2011). Vast wealth of medicinal sources still has to use for curing a number of diseases. A large number of medicinal plants are explored from the natural flora for the commercial production of drugs. (Chandra Kala, 2015).

SUMMARY & CONCLUSION

The natural products derived from medicinal plants have proven to be an abundant source of biologically active compounds many of which have been the basis for the development of new lead chemicals for pharmaceuticals (Farnsworth and Bingel, 1977).

From this review, it is apparent that except a few reports on phytochemistry, pharmacology and antimicrobial studies for productions of secondary metabolites, so there is need to study of oxalidaceae members and improve their possible pharmacological and medicinal values.

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