

## PHYTOPATHOLOGICAL STUDIES ON *Oxalis corniculata* L., A MEDICINAL HERB OF CHHATTISGARH

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### ABSTRACT

Herbs and herbal extracts have been used as medicine since the beginning of human civilization. People have great faith on them for their effectiveness and their inherent medicinal properties. *Oxalis corniculata* L. is a medicinally important plant. Its medicinal usage is reported in different traditional of medicine such as Ayurveda , Unani & Sidha. It possesses important activities like antioxidant, anticancer, antimicrobial, antifungal, antihelminic, anti inflammatory, reported by Ashwin Kumar *et al.* (2012). In Chhattisgarh, *Oxalis corniculata* L. popularly known as Tinpania bhaaji is being consumed as a leafy vegetable crop by the local masses. A periodic survey was made to collect the infected leaves of *O. corniculata* L. for pathological investigations. The two pathogens *Cladosporium herbarum* and *Fusarium oxysporum* were isolated on Potato Dextrose Agar medium.. The pure cultures were maintained on PDA slants for further studies.

**KEYWORDS:** *Oxalis corniculata* L., Tinpania bhaaji, Necrotic, *Cladosporium* , *Fusarium*

*Oxalis corniculata* L. is an important plant of family Oxalidaceae which can be identified by its narrow, yellow green stem and cluster of rounded leaves which produces bright yellow flower. *Oxalis corniculata* is a natural occurring weed that have been used in traditional medicine for the cure of dysentery and diarrhoea in India, Kathiriya *et. al.* (2010). Paste of crushed leaves taken once daily in empty stomach gives relief in dysentery Bhattacharaya *et al.* (2008). Bioactivity profiling of extracts from *Oxalis corniculata* identified several compounds that showed antiamoebic activity against *Entamoeba histolytica* common causal organism of dysentery, D.Anna *et al.* (2010). The protective potential of aqueous extract of *O. corniculata* extract (OCE) against isoproterenol (ISO) induced myocardial infarction in rats result findings confirmed that OCE exhibits significant antioxidant and radical scavenging activity and exhibits significant protecting effect. P.A . Bhilis *et. al.* (2011). Traditional healers of Chhattisgarh applied the aqueous paste of herb externally on affected part to remove the wounds and therefore popularly known as dadmari, P. Oudhia (2003).

*Oxalis corniculata* is a wonderful plant and this review indicates the demand of scientific research to enhance the condition of its cultivation, awareness towards the medicinal properties and

appropriate usage of crop, preparation of byproduct and commercialization of the crop in the world of medicine, for which the disease free crops are needed. The present investigation deals with the isolation of follicolous necrotic fungi, which severely damages the crop.

### MATERIALS AND METHODS

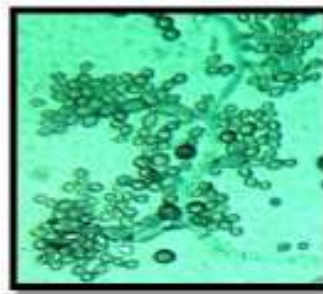
For the research work plant of *Oxalis corniculata* was surveyed periodically to isolate follicolous necrotic fungi during two consecutive crop seasons (November 2012 to December 2013). Leaves were collected from different crop fields of Raipur city viz: Kushalpur, Mahamaya Mandir, Mahadevghat and Changora bhata barries, of approximately one acre in size, photographed, identified and preserved for the herbarium. For isolation of fungal pathogens the infected leaves were surface sterilized with 70% alcohol then dipped in 0.01%Hgcl<sub>2</sub> and consecutively washed with sterilized distilled water. Small infected portion of leaf were transferred on PDA medium (Potato-250 gm, Dextrose-20gm, Agar-20gm, and 1000 ml distilled water Ph-4.5). For the pathogenicity test pot culture method was adopted to ensure “Kochs” postulate. Degree of infection was moderate in *Cladosporium* infested plant where as severe plant affected by *Fusarium oxysporum*. The pure cultures were maintained on PDA slants for further studies.



1(a) Symptoms on leaves

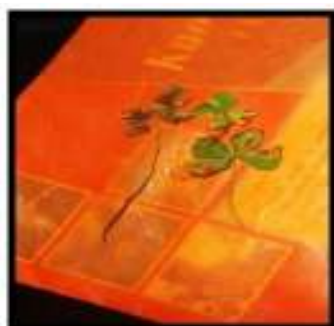


1(b) Culture plate



1(c) Spores

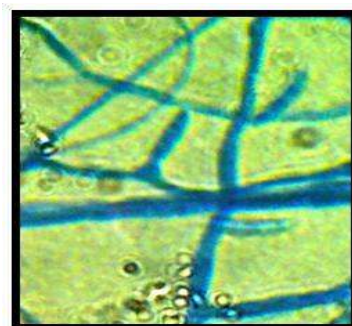
Photographs of *Cladosporium herbarum*



2(a) Symptoms on leaves



2(b) Culture plate



2(c) Spores

Photographs of *Fusarium oxysporum*

## RESULTS AND DISCUSSION

During survey it was found that *Cladosporium herbarum* was isolated from the leaves showing dark brown – large spots. *Cladosporium herbarum* is an ascomycetous fungus, relatively slowly growing greyish colony on culture plate [1(b)]. The dark spores were normally spherical and occurred in long branching chains. The spores of *Cladosporium* are allergens and causes asthmatic and respiratory diseases. Spores size was measured micrometrically and average size was found to be 7.5  $\mu\text{m}$  [1(c)]. *Fusarium oxysporum* was isolated from the leaves with golden brown coloured and severely affected, white coloured colony appeared in plate and elongated macroconidia were measured micrometrically, whose average size was  $45 \times 7.5 \mu\text{m}$  [2(c)]. During literature survey it was found that the wide range of allergenic proteins in *C. herbarum* may result, in sensitisation and subsequent expression of a range of immune related disease like asthma, bronchopulmonary Cladosporosis. H. M. Vijaya *et al.* (2008), B. P. Singh *et al.* (2002). Foliage infection of *F.oxysporum* is supported by its airborne conidia

in Tomato and Basil Rekah *et. al.* (2000). Artificial inoculation of *Fusarium* in potato leaves [Potato research (1985)]. *Fusarium oxysporum* parasitized oxalis plant, but caused no detectable symptoms under green house but play a significant role in the survival of the fungus under field conditions Armstrong (1948), G.S. Abawi *et al.* (1972).

The present study is an attempt to analyze the cultural and medicinal properties of the plant. In addition phytopathological investigations are being made to get the disease free crop so that immense nutritive and medicinal properties of the plant can be completely explored.

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