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Antifungal properties of plant extracts against anthracnose of chilli caused by *Colletotrichum capsici*

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SUMMARY

To study the antifungal properties of two plant extracts at different dilutions against anthracnose of chilli caused by *Colletotrichum capsici* under *in vitro* condition. The antifungal properties of plant species *viz*., *Callistemon lanceolatus* and *Pongamia pinnata* were tested after extracting in 10 per cent concentration of five solvents *viz*., acetic acid, acetone, ethanol, petroleum ether and chloroform along with distilled water as sixth solvent. Among the six solvents used for extraction of antifungal properties of *Callistemon lanceolatus, Pongamia pinnata* separately and combination of both *C. lanceolatus* and *P. pinnata* at 1:10, 1:100 and 1:1000 dilutions acetic acid showed complete inhibition of mycelial growth of *Colletotrichum capsici.*

Key words : Plant extracts, Anthracnose, Chilli

Anthracnose of chilli caused by *Colletotrichum capsici* , a coleomycetous fungus has been reported to be the most serious and destructive disease in the chilli growing areas of the country thereby causing substantial quantitative and qualitative losses. Keeping in mind, the economic importance of the disease, this disease can be controlled by using chemical fungicides. However, the indiscriminate use of chemicals is hazardous to microbial population, living beings and it would also lead to a serious soil and water pollution.Chilli is also used for direct consumption. Spraying of fungicides will cause residual effects. Hence, to find out alternative to chemical fungicides, botanical pesticides or biological agents should be used. With a view to identify effective plant extracts against *Colletotrichum capsici*, present investigations were undertaken during *Kharif*, 2005 in laboratory with the objective, to study effect of plant extracts for antifungal properties.

MATERIALS AND METHODS

The pure culture of the pathogen isolated from ripened diseased fruits showing typical symptoms of anthracnose like circular, sunken with black margin spot covered with a pinkish mass of fungal spores and concentric markings with dark fructifications representing the fungal acervuli, on common laboratory culture medium potato dextrose agar (PDA). Isolated and purified pathogen was sub-cultured on P.D.A. slants and kept at 28 $\pm$ 1 ^{0}C for seven to eight days for good growth. Such slants were preserved in the refrigeration at 5 to 10^{0}C and the isolate was sub-cultured once in a month and also used for *in vitro* studies. The leaf extracts of *Callistemon lanceolatus* and *Pongamia pinnata* were prepared by solvent extraction method and used for screening. In this method, ten grams weighed plant material was surface sterilized by 1% $HgCl_2$ and washed by sterilized water and crushed in mortar and pestle after addition of ten ml of either diluted solvent or distilled water. The pulp was taken in conical flask and to it acetone (extra pure) was added in 1:4 proportion (w/v). A cork with a refluxing glass tube (1 mm diameter and 50 cm height) was fitted to the flask and they were made airtight with plaster of paris. These flasks were held in water bath at 60^{0}C temperature for one hour for evaporation of solvent. As the acetone was evaporated, acetone free extract was filtered through filter paper (Whatman No.1). This filterate was used in food poisoned tests.By employing the same methodology the ethanol, acetic acid, chloroform and petroleum ether extracts were obtained. Five solvents *i.e.* acetone, acetic acid, chloroform, ethanol and petroleum ether at 10% concentration along with distilled water as sixth solvent were used. Separate sets of extracts of bottle brush and extract of Karanj mixed in above 10% solvents at 1:10, 1:100 and 1:1000 dilutions were made. Also instead of using solvents sterilized water mixed in extracts of bottle brush and extract of Karanj at 1:10, 1:100 and 1:1000

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