In vitro Biological Management of Fusarium Wilt of Patchouli Caused By *Fusarium solani*

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SUMMARY

Patchouli is an important aromatic plant used as a low calorie sweetener. Fusarium wilt caused by *Fusarium solani* is an important disease and is a major constraint in patchouli cultivation. Evaluation of the biocontrol agents indicated that maximum inhibition of mycelial growth of *F. solani* (78.11%) was noticed in *Trichoderma harzianum* (Dharwad isolate). Among botanicals tested neem seed kernel extract was more effective (74.86%) inhibiting the growth of *F. solani*.

Key words : Patchouli, *Fusarium solani*, *Trichoderma harzianum*, Neem seed kernel extract

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Patchouli (*Pogostimon patchouli* Pellet.) belonging to family Lamiaceae, is a hardy perennial herb adapted to hot and humid climatic conditions (Maheshwari *et al.*,1993). A commercially important aromatic patchouli oil is extracted from the leaves of this plant. Patchouli oil is a natural fixative used in the aromatic industry. It is well known to blend with other essential oils like vetiver, sandalwood, geranium and lavender etc. It is used in a wide range of toilet soaps, scents, body lotions etc. Patchouli is attacked by many pathogens causing wilts, blight and root knot. The wilt caused by *Fusarium solani* (Mart.) Sacc. was found predominant in Karnataka. Fungicidal sprays are generally recommended for the control of this disease. But extensive use of chemicals leads to serious environmental problems, development of resistance and it may also affect the quality of the crop as many people consume it. Therefore, it becomes necessary to look for economically better and safer means of disease control.

MATERIALS AND METHODS

In vitro evaluation of plant extracts:

Fresh plant materials were collected and washed first in tap water and then in distilled water. One hundred g of fresh sample was chopped and then crushed in a surface sterilized pestle and mortar by adding 100 ml sterile water (1:1 w/v). The extract was filtered through two layers of muslin cloth. Finally filtrate thus obtained was used as stock solution.

To study the antifungal mechanism of plant extracts, the poisoned food technique was used (Nene and Thapliyal, 1982). Five and ten ml of stock solution was mixed with 95 and 90 ml of sterilized molten Potato dextrose agar(PDA) medium, respectively so as to get 5 and 10 per cent concentration. The medium was thoroughly shaken for uniform mixing of extract. Twenty ml of medium was poured into sterile Petriplates. Mycelial discs (five mm) of *Fusarium solani* were cut out by sterile cork borer and one such disc was placed at the centre of each agar plate. Eleven plant extracts *viz.*, *Azadirachta indica* A. Juss, *Allium sativum* L., *Bougainvillea spectabilis* L., *Cassia occidentalis* L., *Clerodendron inerme* Gaerth. *Durantha repens* L., *Eucalyptus globes* Labill, *Glyricidia maculata* L., *Parthenium hysterophorus* L., *Pongemia pinnata* L., *Ocimum sanctum* L. were evaluated at 5 and 10% concentrations. Controls were also maintained by growing the pathogen on PDA plates. Then such plates were incubated at 27±1^{0}C and radial growth was taken when maximum growth occurred in control plates. The efficacies were expressed as per cent inhibition, which was calculated by using the formula suggested by Vincent (1947).

$$I = \frac{(C - T)}{C} \times 100$$

where,
I = Per cent inhibition