

## Effect of plant extracts against *Alternaria alternata* causing leaf blight of turmeric

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### SUMMARY

Eleven plant extracts were evaluated against *Alternaria alternata* causing leaf blight of turmeric. Asafoetida at 10 per cent was most effective in inhibiting the pathogen and significantly superior over all plant extracts evaluated. This was followed by neem seed kernel extract at 10 per cent, asafoetida at 5 per cent, neem seed kernel extract at 5 per cent and garlic bulb extract at 10 per cent.

Key words: *Alternaria alternata*, Leaf blight, Turmeric, Plant extracts.

**T**urmeric (*Curcuma longa* L.) is a herbaceous perennial plant belonging to the family Zingiberaceae, under the order Scitaminae. It is one of the most valuable and important spices of the world. It is cultivated for its underground rhizomes which are used in many ways viz., condiments in culinary preparation, colouring agents in textiles, in cosmetics (facial preparations and creams) and ayurvedic drug preparations. It is considered an auspicious spice in human life. Leaf blight caused by *Alternaria alternata* (Fr.) Keissler is an important foliar disease of turmeric. In India, the disease was first reported by Chowdhury (1969). The leaf blight is commonly found and becoming serious in turmeric growing areas of Karnataka. An attempt was made on management of this disease by plant extracts. The plant extracts will help in reducing cost, environmental hazards and development of resistance by pathogen to fungicides. In present investigation, eleven plant extracts were evaluated at two concentrations (5% and 10%) against *A. alternata* under *in vitro* condition.

### MATERIALS AND METHODS

Fresh plant materials were collected and washed first in tap water and then in distilled water. Hundred grams of fresh sample was chopped and then crushed in a surface sterilized pestle and mortar by adding 100 ml sterile distilled 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 (Zentmeyer, 1955). Five and ten ml of stock solution was mixed with 95 and 90 ml of sterilized molten potato dextrose agar (PDA) media, 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, mycelium of five mm size discs from periphery of actively growing culture were cut out by sterile

cork borer and one such disc was placed on the center of each agar plate. Controls were also maintained by growing the pathogen on PDA plates. Then such plates were incubated at room temperature for twelve days and radial growth was taken when maximum growth occurred in the control plates. The efficacy of plant extracts was calculated by using the formula suggested by Vincent (1947).

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

Where,

- I = Per cent inhibition
- C = Radial growth in control
- T = Radial growth in treatment

### RESULTS AND DISCUSSION

Results depicted in table indicated that, asafoetida (46.28%) was significantly superior over all other the plant extracts evaluated against *A. alternata*. Neem seed kernel extract (42.78%) was next best and this was followed by tulsi (33.32%) and parthenium (31.48%), which were on par with each other. Asafoetida at 10 per cent (51.10%) was best and significantly superior over all plant extracts for managing *A. alternata*. Neem seed kernel extract at 10 per cent (45.93%) was next best followed by asafoetida at 5 per cent (41.46%), neem seed kernel extract at 5 per cent (39.63%) and garlic bulb extract at 10 per cent (38.53%) were found on par with each other. Parthenium at 10 per cent (37.43%) and tulsi at 10 per cent (35.16%) were next in order. Asafoetida was found to be best against *A. alternata*. Its antifungal nature has to be studied. Singh and Majumdar (2001) reported that neem leaf extract was effective against *A. alternata*. *Ocimum sanctum* showed strong inhibitory against *A. tenuis* Nees. (Shekhavat and Prasad, 1971). The present investigation revealed that asafoetida and neem seed kernel extract are effective against *A. alternata*.

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