

Efficacy of plant extracts for the control of powdery mildew of coriander (*Coriandrum sativum* L.)

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Abstract

Evaluation of five plant extracts namely, *Andrographis paniculata*, *Azadirachta indica*, *Polyalthia longifolia*, *Saraca indica* and *Adina cardifolia* for the control of powdery mildew of coriander (*Coriandrum sativum*), in comparison with wettable sulfur 0.3% indicated that *A. paniculata* and *A. indica* were significantly superior in reduction of disease severity and increase in grain yield over control indicating their potential for use as a component in integrated management of the disease.

Key words: coriander, *Coriandrum sativum*, plant extracts, powdery mildew.

Powdery mildew, caused by *Erysiphe polygoni* DC, is one of the most destructive diseases of coriander (*Coriandrum sativum* L.) in India (Pillai & Nambiar 1982). The severity of the disease has increased in recent years due to changing production practices, especially due to use of high yielding late maturing varieties. Chemical control with fungicides is the only option available at present to control the losses caused by powdery mildew (Raju *et al.* 1982; Keshwal *et al.* 1979; Srivastava *et al.* 1971; Adiver & Rajanna 1991; Ali *et al.* 1999). In view of the harmful effects of fungicides, an attempt has been made to control powdery mildew disease of coriander with plant extracts and the results are presented in this paper.

The experiment was conducted at Regional Agricultural Research Station, Indira Gandhi Krishi Viswavidyalaya, Raigarh

(Chhattisgarh) during *rabi* season 2002–04, in a randomized block design, with seven treatments namely, leaf extracts of *Azadirachta indica* A. Juss, *Andrographis paniculata* Nees, *Saraca indica* L., *Adina cardifolia* (Roxb.) Brandis, *Polyalthia longifolia* Thw. and a fungicide (wetable sulphur) and untreated control, with three replications, in a plot size of 3 m². All the recommended agronomical practices except the general fungicidal spray, were adopted to raise a good crop. To prepare the extract, 300 g of chopped leaves, was ground in 1 l of water and the supernatant, after filtering through fine muslin cloth was collected, which formed the standard plant extract solution (100%). For spraying, 100 ml of the standard solution was dissolved in 2 l of water and sprayed just after the first symptom of appearance of the disease followed by two more sprays at 10 days interval of the first spray. Disease scoring was

done on randomly selected 20 plants, 10 days after third spray, on a 0–9 point scale (0=no symptoms on the plant, 1=1 to 10 small patches on the leaves, 3=10 to 20 small patches on the leaves, 5=more than 50% of leaf area covered, 7=symptoms on leaves and stems and 9=symptoms on umbels and capsules). The disease severity, in each replication, was worked out by the formula:

$$\text{Per cent Disease Index} = \frac{\text{Sum of all disease ratings}}{\text{Total no. of ratings} \times \text{max. disease grade}} \times 100$$

Among the various plant extracts evaluated, plant extracts of *A. paniculata* and *A. indica* were significantly superior over control, but not as effective as wettable sulphur, which is

Table 1. Efficacy of plant extracts against powdery mildew disease of coriander

Treatment	Disease Index* (%)	Yield [g(3 m ²) ⁻¹]*
Untreated control	46.2	48.3
Wettable sulfur 0.3%	15.7	153.3
<i>Azadirachta indica</i>	31.3	100.0
<i>Andrographis paniculata</i>	28.8	121.7
<i>Saraca indica</i>	46.3	58.3
<i>Adina cardifolia</i>	49.7	53.3
<i>Polyalthia longifolia</i>	48.0	60.0
CD(P=0.05)	12.0	42.4

* Mean of 2 years

a well known fungicide for the control of powdery mildew of coriander (Raju *et al.* 1982; Keshwal *et al.* 1979; Srivastava *et al.* 1971, Ali *et al.* 1999). The per cent disease severity in *A. paniculata* and *A. indica* extracts was 28.8% and 31.3%, respectively, in comparison to 15.7% in wettable sulphur. The grain yield was significantly higher in wettable sulphur (153.3 g plot⁻¹) treated plots in comparison to all other treatments. The grain yield in *A. paniculata* (121.7 g plot⁻¹) and *A. indica* (100.0 g plot⁻¹), was statistically at par to each other, but significantly higher over control and other plant extracts. Control of powdery mildew in coriander by

three sprays of onion leaf extract (5%), has been reported earlier (Ramanathan 2004). Thus, extracts of *A. paniculata* and *A. indica* offer great potential for use as a component of integrated disease management, to manage powdery mildew of coriander.

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