



RESEARCH ARTICLE

Exploiting the extract of medicinal plants for the management of grapevine powdery mildew

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ABSTRACT

Extract of fifteen medicinal plants were screened for their antifungal activity against grapevine powdery mildew caused by *Uncinula necator*. The results of the *in vitro* study revealed that, the neem seed kernel extract (NSKE) 5 per cent recorded the highest germination inhibition of 72.02 per cent. This was followed by leaf extract of *Ocimum sanctum* (10%), rhizome extract of *Curcuma longa* (5 %) and leaf extract of *Catharanthus roseus* (10 %) which inhibited the conidial germination by 69.1, 65.9 and 64.2 per cent, respectively. The results of the field experiment showed that two rounds of spraying with NSKE (5 %), first spray immediately after the appearance of the disease and second at 15 days intervals effectively reduced the powdery mildew (62.24% disease reduction) disease incidence.

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INTRODUCTION

Medicinal plants are the excellent source of antimicrobial agents which possess antifungal, antibacterial and antiviral properties. Plant generally produces many secondary metabolites which constitute important sources of micro biocides. The search for antimicrobial activity of medicinal plants against plant pathogen is highly essential because green plants are safer than costly synthetic fungicides. The objective of present study was to investigate the antifungal activity of traditionally used medicinal plant extracts against grapevine powdery mildew disease caused by *Uncinula necator*. Grapevine powdery mildew causes up to 50 per cent losses in South India (Sohi, 1983). Powdery mildew affected berries are cracked there by providing entry sites for *Botrytis cinerea* and sour rot organism (Sall *et al.*, 1981). Powdery mildew fungi infection resulted in reduced average bunch and berry size and weight (Thind *et al.*, 1998). Most of the grapevine growers use fungicides for the management of powdery mildew which have many adverse side effects. To overcome all the ill effects caused by the synthetic fungicides

and to evolve eco-friendly management strategy for grapevine powdery mildew, the present study was undertaken.

MATERIALS AND METHODS

Preparation of plant extracts :

Extract of fifteen medicinal plants were screened for their antifungal activity against *U. necator in vitro*. Freshly collected plant material (leaf, seed rhizome and root) were separately washed with tap water and then with alcohol and finally with repeated changes of sterile distilled water. These were separately grounded in sterile distilled water (1 ml/ g of the tissue) using a pestle and mortar. The extract was strained through two layers of muslin cloth. Subsequently filtered through Whatman No.1 filter paper and finally passed through Seitz filter to eliminate bacterial contamination. This formed standard plant extract solution (100 %). This was further diluted to the required concentration with sterile distilled water. All the leaf extracts were used at 10 per cent concentration while seed and rhizome extracts were used at five per cent concentration.