

## Losses of Phytochemical components due to infection of leaf blight disease in *Solanum nigrum* L.

S. VANITHA\* AND R. BALAGURUNATHAN

Department of Sericulture, Tamil Nadu Agricultural University, COIMBATORE (T.N.) INDIA

(Accepted : March, 2008)

### SUMMARY

The phytochemical constituents were reduced due to infection of pathogen *Alternaria chlamydospora* Mouchacca in *Solanum nigrum* L.. The presence of phytochemical compound were quantified through UV scan at 460 nm. among five solvents used for extraction of alkaloids, the chloroform clearly showed the presence of compounds in terms of peaks. The lowest number of peaks was observed in severely infected plants compared to healthy. The total alkaloids were estimated and indicated that the loss in total alkaloid content increased as the grade of disease severity increased. The loss in total alkaloid content was ranged from 0.9320 to 0.1533 mg 100 g<sup>-1</sup> of sample. However, the maximum disease grade of 9 showed the highest loss of 0.1533 mg 100 g<sup>-1</sup> total alkaloid. The solasodine content was quantified through high performance thin layer chromatography and the results indicated that the content solasodine was highest (26.34%) in 0-25 per cent leaf area infected sample and in severely infected sample (75-100%) the solasodine content was not present. The total alkaloids and solasodine content were considerably reduced as disease severity increased.

**Key words :** Pharmaceutical, Solasodine, Phytochemical.

**B**lack Nightshade (Tamil: *Manathakkali*) is the vernacular name of *Solanum nigrum* L., which belongs to the family Solanaceae. This herb is now-a-days gaining importance in pharmaceutical industry due to its amazing drug potential. The active principle in this herb is solasodine, a glucosidal alkaloid. The whole plant is recommended as cardiac tonic, alterative, diuretic, sedative, expectorant, diaphoretic, carthatic and anodyne. The whole plant is recommended as cardiac tonic, alterative, diuretic, sedative, expectorant, diaphoretic, carthatic and anodyne. Decoction of its leaves are used to cure dropsy, enlargement of liver and jaundice. The juice of the plant is also prescribed for chronic skin diseases, blood spitting, piles, inflammation of kidney and bladder and gonorrhoea (Nadkarani, 1976). Berries of the plants are alterative and diuretic and are used against fevers, diarrhoea and heart diseases (Chopra *et al.*, 1986). Solasodine is used as a starting material for the synthesis of hydrocorticoids and is having great demand in the pharmaceutical industry (Dhawan, 1986). The latest literature survey indicated that the compound GMD-1630 obtained from the whole plant of *S. nigrum* has anticancer properties and its preparation has been patented by China (Bep Oliver Bever, 1986). These therapeutic value shows that this herb is one of the commercially viable plant in future for exploitation. *S. nigrum* is also very popular and extensively grown as green vegetable of Tamil Nadu throughout the year. The leaf blight *Alternaria* is a serious fungal disease common in India. This disease virtually

threatens the successful cultivation of the crop. Leaf blight of *S. nigrum* was noticed during 2001 in field as well as home gardens. The pathogen causing leaf blight of *S. nigrum* (*Alternaria chlamydospora* Mouchacca) is very serious in all parts of Tamil Nadu and cause economic loss and affect the quality.

### MATERIALS AND METHODS

The leaf blight disease incidence was observed and estimated as per the standard grade chart (0-9 scale) given below (Mayee and Datar, 1986). Per cent Disease Index (PDI) was calculated by using the formula given by Mc Kinney, (1923).

#### *Determination of loss of phytochemicals:*

Samples with disease grade of 0-9 were collected separately and shade dried till constant weight was obtained. Then it was made to a powder form and used for solvent extraction.

#### *Solvent extraction:*

Solvent extraction is a method to extract a soluble fraction of phytochemicals from a solid medium. The different solvents *viz.*, hexane, methanol, chloroform, ethyl acetate and water were used for extraction of alkaloids. About 5.0 g of sample was taken in a weighed flask and 250 ml of above mentioned solvents were added for extraction through Soxhlet apparatus. The extraction was completed when the solution in the Soxhlet chamber

\* Author for correspondence.