EVALUATION OF ANCIENT PRACTICE FOR CONTROL OF WHITEFLY IN MUSK MALLOW

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ABSTRACT

In order to control of pests and diseases, different chemicals are applied by farmers, the inconsiderable use of chemicals, result development of resistance in pest, and alters the enemy of crops. Phytochemical are proving good alternatives of such insecticides. In present study, bioactivity of some phytoextracts, viz. *A indica. J. curcas D. plamatus, N. oleander, V.negundo, M. charantia, A maxicana,* were tested at alternate day interval as spray. Phytoextract with cattle urine was found more effective, than phyotoextracts with water, for suppression of white fly population compared to the control. The former treatment showed that number of whitefly population was reduced and found effective for control of whitefly in musk mallow.

Keywords: Phytochemicals, Ancient Practices, Whitefly, Plant Extracts Musk mallow. Cattle Urine Plant Extracts

INTRODUCTION

Musk Mallow (*Abelmoschatus moschatus*) is important ornamental and medicinal plant, all the parts of the plant are valuable for their medicinal value such as, antiphlogistic, astringent, demulcent, diuretic, emollient expectorant, laxative etc.

The leaves can be eaten. It is used against inflammations, insect bites and taken internally for the treatment in respiratory system, digestive system and urinary system. The seeds are of great economic importance in production of perfumes (Singh *et al.*, 1961, Srivastava, 1955).

The plant get affected by various pests, Among these, phylloplane diseases like leaf blight, powdery mildew and insect diseases like spider mites, slugs and the white files are common (Orwa *et al.*, 2009). White fly (*Trialeaurodes vaporariorum L*) has been most destructive sucking pest. It desaps the leaves causing wilting and poor development in plant. At the point of fly bite a liquid secretes where sooty mould grows. The process of photosynthesis is also get affected, which arrest the growth plant and cause great economic loss to growers (Meena *et al.*, 2012).

For the control of the pest many chemical insecticides are applied by farmers and inconsiderable use of chemicals develop residual hazards, kills the useful microbes and also affect the biodiversity that disturb the natural balance.

In view of above situation it is essential to assay the efficacy of some organic and eco-friendly methods against the white fly infection of musk mallow (*Abelmoschus moschatus*). Modern agricultural practices used give adverse effect on human health and create environmental problems, so there is responsibility of the scientific community to search the practices followed by our ancestors to control such pest attack. There were lots of formulation used by our fore fathers for sustainable development of agriculture that was eco-friendly and better for yield.

The plant and plant parts are natural source of different phytochemicals those have repellent and insecticidal activity. Botanical protectants have less residual effect and safe for environment, so its widely acceptable than the inorganic formulation that provide an alternative for synthetic pesticides to control the pest and diseases. Neem cake extract was found effective in management of white fly population in mung bean and neem leaf extract was effective against bud fly (Gupta *et al.*, 2000 and Hussain *et al.*, 2001). Gupta and Rawat was found that, the cow crime extract is highly effective against bud fly in linseed.

Cow butter milk was also used by tribal people for control of pest and found more effective in pod borer in chick pea (Gupta and Rawat, 2004).

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In the present study, attempt has been made to find out the efficacy of cattle urine with plant extract against whitefly of musk mallow.

MATERIALS AND METHODS

The extract of plant / plant parts have been selected for study were *Azardirachata indica*, (Kadulimb), Jatropha curcas, (Ranarand), Diplocyclos Palmatus (Shivlingi), Nearium olender (Kanear), Vitex negudo (Nirgudi), Mornordica charantia (Karli), Argemone mexicana (Piwala dhotra),

The fresh leaves were collected, washed with distilled water and ethanol. The leaves were dried and grind with mortar and pastel and fine powder was prepared. The cattle urine extract, was used as per the method suggested by Meena *et al.*, (2012).

The powder of the leaves, were socked in cattle urine in 1:10 ratio. It is incubated for proper fermentation for 15 days. The preparation was mixed and filtered to remove particulate matters and stored in refrigerator. Thereafter, this preparation was considered as 100 % stock solution and used for spray. The number of white files per plant was observed at alternate day interval.

| Table 1: Efficacy of different | phyotoextract and water | on incidence of whitefly |
|--------------------------------|-------------------------|--------------------------|
|--------------------------------|-------------------------|--------------------------|

| Treatments | Before spray | After spr | Mean | | | |
|--------------------------|--------------|-----------|--------|--------|--------|--------|
| | (untreated) | Ι | II | III | VI | |
| Azardirachta indica | 170.00 | 0.00 | 5.25 | 8.25 | 10.75 | 38.85 |
| Jatropha curcas | 173.75 | 0.62 | 7.75 | 9.75 | 11.25 | 40.73 |
| Diplocyclos palmatus lin | 175.00 | 0.70 | 8.25 | 10.50 | 13.00 | 41.53 |
| Nearium oleander | 181.50 | 0.89 | 8.75 | 11.00 | 13.75 | 42.25 |
| Vitex negudo | 192.25 | 0.92 | 9.25 | 11.75 | 14.50 | 45.50 |
| Mornordica charantia Lin | 198.00 | 0.96 | 10.25 | 12.00 | 15.75 | 47.25 |
| Argemone mexicana | 210.00 | 0.97 | 12.50 | 19.25 | 17.00 | 50.75 |
| Control | 260.00 | 370.35 | 376.75 | 390.70 | 412.80 | 362.12 |
| Mean | 195.15 | 46.83 | 54.56 | 58.18 | 63.28 | 83.60 |
| CD=0.05 | 69.20 | 16.60 | 19.34 | 20.63 | 22.43 | |

Table 2: Efficacy of Phytoextract with cattle urine on incidence of whitefly's

| Treatments | Before | After spra | | Mean | | |
|--------------------------|-------------|------------|--------|--------|--------|--------|
| | spray | Ι | II | III | VI | |
| | (untreated) | | | | | |
| Azardirachta indica | 162.00 | 0.00 | 0.00 | 2.50 | 4.75 | 33.85 |
| Jatropha curcas | 166.25 | 0.30 | 0.41 | 3.75 | 5.00 | 35.14 |
| Diplocyclos palmatus lin | 171.50 | 0.42 | 0.43 | 5.25 | 6.50 | 36.77 |
| Nearium oleander | 168.75 | 0.47 | 0.50 | 5.75 | 8.25 | 37.00 |
| Vitex negudo | 173.25 | 0.51 | 0.62 | 6.75 | 10.00 | 38.16 |
| Mornordica charantia Lin | 175.30 | 0.54 | 0.66 | 8.25 | 12.50 | 39.75 |
| Argemone mexicana | 180.00 | 0.60 | 0.69 | 9.75 | 14.75 | 41.15 |
| Control | 263.25 | 289.00 | 290.75 | 325.00 | 360.75 | 248.12 |
| Means | 179.13 | 36.46 | 36.74 | 45.65 | 5281 | 70.13 |
| CD =0.05 | 42.14 | 211.4 | 711.7 | 997.6 | 1298.0 | |

RESULTS AND DISCUSSION

The result, presented from Table No. 1 and 2 shows that population of whitefly was significantly reduced on treated musk mallow plants as compared to untreated plants. It was noted that the remarkable suppression of white fly occur so on the plant sprayed with phytoextract.

The efficacy of phytoextract of *A. indica* show 170 fly before spray and after treatment there was reduction of white fly i.e., 38.85. The insecticidal property of extract of *A indica* with cow urine found

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more effective than, the phytoextract with water i.e., 162 fly per plant before treatment and 33.85 fly per plant after treatment (Table no.2) In *J. curcas* 35.14 fly per plant was observed on application over the control 166.25 *D. plamatus* 36.77 fly plant over 171.75.*N. Oleander* 37.00 fly over 168.75,*V. negundo* 38.16 over 173.25.The plants treated with *M. charantia* 39.75 fly per plant was observed over untreated 175.30 in *A mexicana* 41.15 fly per plant noted over untreated 180.00. Observation recorded in table no. 1 when compared with table no. 2 shows that phytoextract with cattle urine is found best as compared to phyto extract with water.

The efficacy of botanicals alone or in combination with cattle urine has been used by various worker against different pest and diseases in different plants (Mohapatra *et al.*, 2009; Hegde and Nandihall 2009, Ahmed *et al.*, 2010).

Conclusion

This study reveals that phytoextract in combination with cattle urine are more effective in reducing white fly population in musk mallow. We can emphasize that indigenous knowledge based pest control methods developed by our ancestors would be better if they are standardized. This will help us prepare the safety eco-friendly non-hazardous formulation for crop protection.

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