

## Application of Herbal Extracts for Control of House Dust Mites in Rural Areas of Dharwad Taluk

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### INTRODUCTION

House is a place where people live and carry out different activities which leads to the accumulation of dust in the house. Besides dust particles, dust contains minute organisms called "house dust mites" which are microscopic in nature. Many species of mites are known to be present in the dust and the most common are dermatophagoides species from the family pyroglyphidae.

House dust mites are higher in number in houses/areas where there is high humidity and lower light intensity. The main reasons for the occurrence of dust mites are improper ventilation and faulty cleaning practices. Proper ventilation in the house prevents the occurrence of mite. Natural ventilation can be provided through proper placement of windows, ventilators and doors. Effective management of mites is possible through better cleaning practices and proper waste disposal methods from the dwellings.

House dust mites can be controlled by using herbal extracts having acaricidal properties. The present study is conducted to know the shelf life of herbal extracts in managing house dust mites. From this point of view, an effort was made to suggest a suitable herbal extract based on the shelf life to the mud floored households.

### METHODOLOGY

The study was conducted in Narendra village of Dharwad taluk. The sample size consisted of 90 houses having mud floor selected randomly. The self structured and pre-tested interview schedule was used to collect information from the selected households. The data from the housewives was collected by personal interview method.

The selected seed extracts (viz., karanja, castor and neem) were prepared using cold alcoholic method (Holehosur et al., 1996) based on the results of laboratory experiments. The prepared

seed extracts at 1:10 concentration (extract: water) was selected for the application at the household level to the multipurpose room in which maximum dust accumulates. The prepared seed extracts were stored in bottles and were applied on 1st, 15th and 28 day of storage. Out of the total sample, 30 households for the application of each seed extract were selected. After the application of each seed extract, next day dust was collected and number of mites per gram of dust was counted.

### RESULTS AND DISCUSSION

Table 1 indicated the materials stored in the multipurpose room. A majority (66.6%) of the households stored food grains in the multipurpose room followed by clothes (55.5%) and bedding (35.5%).

Table 2 depict the cleaning practices followed in the selected households. As far as sweeping is

Table 1: Materials stored in the multipurpose room

| S.No. | Materials  | Number<br>(n=90) | Percentage |
|-------|------------|------------------|------------|
| 1.    | Grains     | 60               | 66.6       |
| 2.    | Equipment  | 24               | 26.6       |
| 3.    | Clothes    | 50               | 55.5       |
| 4.    | Implements | 22               | 24.4       |
| 5.    | Beddings   | 32               | 35.5       |
| 6.    | Others     | -                | -          |

Table 2: Cleaning practices followed in the selected households

| S.No. | Category                            | Number<br>(n=90) | Percentage |
|-------|-------------------------------------|------------------|------------|
| 1.    | <i>Sweeping</i>                     |                  |            |
|       | a. Once in a day                    | -                |            |
|       | b. Twice in a day                   | 71               | 78.9       |
|       | c. Thrice in a day                  | 19               | 21.1       |
| 2.    | <i>Mopping</i>                      |                  |            |
|       | a. Once in two days                 | 5                | 5.5        |
|       | b. Once in a week                   | 69               | 76.7       |
|       | c. Once in 15 days                  | 16               | 17.8       |
| 3.    | <i>Application of disinfectants</i> |                  |            |
|       | a. Used                             | -                | -          |
|       | b. Not used                         | 90               | 100        |

concerned majority (78.8%) of the housewives swept their house twice in a day (i.e. morning and evening) and about 21.1 per cent swept their house thrice a day (i.e. even in the afternoon). The reason may be that accumulation of dust in rural areas was more because of their close proximity to roads which are made of mud and also due to improper cleaning practices followed in rural houses. With regard to plastering/mopping of the floors, as high as 76.6 per cent of the housewives plastered the floors with cowdung once a week. Cent per cent of the households did not use any disinfectants while plastering the mud floor. This may be because of more illiteracy and ignorance.

Table 3 reveals the mean mortality rate of mites with the selected seed extracts of 1:10 concentration on different days of application at the household level. The application of karanja seed extract on first day of preparation showed highest mean mortality rate of mites (79.26%) followed by 15th and 28th day of storage. Irrespective of the days of storage, karanja seed extract showed highest (68.95%) mean mortality rate of

**Table 3: Mean mortality rate of mites with the selected seed extracts of 1:10 concentration on different days of application at the household level**

| Days of<br>application | Mortality rate of mites (%) |        |       | Days<br>mean |
|------------------------|-----------------------------|--------|-------|--------------|
|                        | Seed extracts               |        |       |              |
|                        | Karanja                     | Castor | Neem  |              |
| 1 day old              | 79.26                       | 62.50  | 44.69 | 62.15        |
| 15 day old             | 69.46                       | 48.11  | 42.23 | 53.26        |
| 28 day old             | 58.14                       | 43.83  | 38.48 | 46.82        |
| Seed extracts          | 68.95                       | 51.48  | 41.80 | 54.07        |

mites at 1:10 level of concentration compared to castor (51.48%) and neem seed extracts (14.8%). The reasons may be that the seeds of karanja contained poisonous chemical constituents. The seeds also contained 27 to 36.4 per cent of bitter fatty oil and found to have insecticidal properties which was studied by Chopra (1949) and Rai et al (1988). Statistically the difference between the mortality rate of mites was highly significant (Table 3a) with respect to seed extracts and days of

**Table 3(a): Analysis of variance for mean mortality rate of mites on application of selected seed extracts on different days with 1:10 concentration at the household level**

| Source               | Degree of freedom | Sum of squares | Mean sum of squares | Cal 'F' value |
|----------------------|-------------------|----------------|---------------------|---------------|
| Seed extracts        | 2                 | 11362.69       | 5681.345            | 235.6**       |
| Days                 | 2                 | 3557.69        | 1778.845            | 74.10**       |
| Seed extracts x days | 4                 | 787.4          | 196.85              | 8.20**        |
| Error                | 81                | 1944.43        | 24.01               |               |
| Total                | 89                | 17652.21       |                     |               |

\*\*Significant at 1% level

|                      | S.E.m± | CD at 1% |
|----------------------|--------|----------|
| Seed extracts        | 0.893  | 3.26     |
| Days                 | 0.893  | 3.26     |
| Seed extracts x days | 1.547  | 5.65     |

application and also interaction effect.

## CONCLUSION

Majority of the households stored food grains in the multipurpose room. Sweeping of the house twice in a day was practiced by majority of the households. Majority of the households practiced plastering the floor once in a week and did not use any disinfectants while plastering the floor. The application of karanja seed extract was found to be more effective in control of house dust mites upto 28 days of storage compared to castor and neem seed extracts.

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