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Management of House Dust Mites with Herbal Extracts in Lamani Households

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INTRODUCTION

The state government of Karnataka has listed the Lambanis as one of the backward (denotified) communities as scheduled caste or tribe since June 1977 (Halbar 1975). Lambanis have been described as "A class of traders, herdsmen, cattle breeders and cattle lifters." They normally used to stay out side the village in groups in huts called as ' Thandas,' and they never build substantial houses in any locality. In Lambanis households most of the houses are built with mud and flooring either mud with cow dung plastering or cadapa stone. The living pattern of the Lambanis is such that they love to live together in small over crowded multi purpose room. This small over crowded room hinder the proper cleaning, hence there is accumulation of dust which forms a good base for the occurrence of house dust mites.

House dust is a heterogeneous mixture including synthetic and natural fiber, dander, minerals, food particles, ash, pollen, fungi and insect segments (Bronswijk, 1987). House dust helps for the growth of many organisms including mites.

The house dust mites are very harmful to the individuals. They cause various health hazards to the inmates of the family. The best known illness associated with the mites appear to be atop syndrome, asthma and rhinitis. The respertory disorders and atopic dermatitis are caused by the allergens resulting by the presence of the mites (Channabasavanna, 1982). Ram kumar and Tarlok Singh (1987) from Punjab and Himachal Pradesh attributed the allergic reaction in children to the abundance of mites inhabiting the dust. Management of house dust mites is possible through cleaning of the room and proper waste disposal from the dwelling. But most of the Lambanis indifferent and do not give much attention for these activities.

There are many chemical agents available for the control of house dust mites, but they may be expensive for the Lambanis because of their economic conditions and living style. In addition, use of the chemical requires proper understanding about the chemical. Majority of the Lambanis are illiterates as such therefore, use of chemicals has got its limitation. But these Limabanis are quite aware of forest trees as they depend mostly on forest for their lively hood. they have an association with plants and their products. There are many plants specially leaf and seed extracts which are found to have an effect on dust mites. From this point of view, an effort was made to find out the suitable herbal extracts for the management of house dust mites in Lambani households.

METHODOLOGY

The study was conducted in two Lambani settlements (Hulikatti and Sigatti) in Kalaghatagi taluk of Dharwad district. The sample size comprising of 82 households of which fifty per cent with mud floor and fifty per cent with cadapa stone floor were selected for the study. Laboratory experiments were conducted in three parts. (I). Collection of dust samples and enumeration of dust mites (ii) use of leaf and seed extracts to study the mortality of house dust mites, and (iii) Application of selected herbal extracts at the house hold level.

Lab Experiments: Both the leaf and seed extracts were used to test the mortality of house dust mites under laboratory conditions.

A sample of 20 g of each plant leaf and 20 ml of water was taken and ground by using pestal mortar and the concentrated solution was diluted to 1% level (1 ml in 100ml of water) applied to different petridish with the help of brush. As a measure to test the efficiency of the solution the mortality rate of the house dust mites were considered, hence ten live and

active mites were introduced into the each petridish. After 24 hours the dead mites were counted. The experiment was repeated three times with two, four and six per cent level of concentration.

However the mortality rate of house dust mites was very low as such thus, leaf extracts was not used for further study.

Similarly for seed extracts 20 g of the seeds were crushed into powder and sieved powder was taken and 100 ml of water was added and boiled for 10 minutes. Then 100mg 501 washing bar soap was added and kept for cooling. One ml of this solution was added to 100 ml of water and smeared to petridish by using the brush and the mortality of house dust mites was observed. The experiment was repeated four times for its accuracy and the mean dead mitess were counted. Based on the effectiveness in the mortality rate of house dust mites, Karanja, Castor and Neem seed extracts were selected for further field study.

Field Experiments: The selected three seed extracts were mixed with the cow dung while plastering the mud floor and the seed extracts were mixed with water while mopping the tiled floor (cadapa stone). After application of the seed extracts in the selected households, the dust was collected with the use of both types of brooms and mortality of the house dust mites was studied.

RESULTS AND DISCUSSION

Table 1 reveals that the effect of different seed extracts on mortality rate of house dust mites under laboratory conditions. Data indicates that the mortality rate of house dust mites was highest in case of Karanja (95%) followed by Castor (90%) and Neem (85%) seed extracts. The least percentage of mortality rate was observed in Custard apple seed extracts (62.5%). Hence based on these findings the Karanja, Castor, and Neem seed extracts were selected for further application at the field level in Lambani thandas.

Data presented in table 2 shows significant difference between the seed extracts and their effectiveness on different floors. Highest mortality of house dust mites (79.04%) was observed

Table 1: Effect of different seed extracts on mortality rate of house dust mites under labouratory conditionss (1: 100 Ml)

Name of seed extracts	*No.of replications*	*No. of mites introduced*	*Mortality (%)*
Karanja Hulgal, Honge *(Pongamia pinnata)*	4	40	95.00
Castor Oudal *(Ricinus communis)*	4	40	90.00
Neem Bevu *(Azadirachata indica)*	4	40	85.00
Sweet flag Baje *(Acorus calamus)*	4	40	75.00
Hoary Basil Tulasi *(Ocimum americanum)*	4	40	72.50
Custard apple Seetaphal *(Annana squamosa)*	4	40	62.50

with the use of Karanja seed extracts followed by Castor (67.39%) and Neem (61.98%) seed extracts. Grainage and Ahmad (1988) and Hiremath (1984 also observed that seed extracts contain insecticidal, acaricidal and aphidicidal properties and these may be more in Karanja seed as compared to other seeds. The comparison between the floor on which these seed extracts were applied, the mud floor showed 72.22 per cent of mortality which was significantly higher than tiled floor 66.72 per cent.

The seed extracts of Karnaja did not differ significantly for mortality of mites when applied on tiled (78.38%) and mud floor (79.69%). However, mortality rate of house dust mites more in mud floor both in Castor and Neem seed extracts. Mud floor may retain their seed

Table 2: Mean mortality rates of mites when different seed extracts were used on different types of floors

Seed extracts	*Mortality of house dust mites(%)*		*Seed extract mean*
	Mud Floor	*Tiled Floor*	
Karanja	79.69	78.38	79.04
Castor	72.67	62.11	67.39
Neem	64.30	59.67	61.98
Floor mean	72.22	66.72	69.47
CD for seed extracts		= 1.56	
CD for floor		= 1.27	
CD for seed extracts and floor		= 2.21	

extracts applied to the tiled floor which might have caused the difference in mortality of house dust mites.

Table 3 indicates the difference between long and short brooms which were used for collection of dust and mites. Mean mortality rate of the house dust mites was high when long broom was used and it also collected more number of mites as it could reach more area compared to short broom. In all the cases, Karanja seed extracts was found more effective in controlling of house dust mites compared to other seed extracts. Karanja seeds may contain more poisonous chemicals as compared to other seeds. Karanja seeds were found to contain 27-36.4 per cent of bitter fatty oil which have incsecticidal properties (Chopra, 1949). The seeds of Castor also contain ethanol and methanol and the seeds of Neem contain an amaorphous bitter principles and also a crystalline substance, margospierin. These chemicals must have acaricidal properties for mortality of house dust mites. These observations are in agreement with Rai et al. (1988).

Table 3: Mean mortality rates of mites when different seed extracts were used on different types of floor

Broom	*Seed extracts*	*Mortality of house dust mites (%)*		*Seed extracts*
		Mud Floor	*Tiled Floor*	*mean*
Short broom				
	Karanja	77.92	77.43	77.68
	Castor	72.40	61.72	67.06
	Neem	62.50	59.27	60.88
Long Broom				
	Karanja	81.47	79.33	80.40
	Castor	72.93	62.50	67.72
	Neem	66.10	60.07	63.08
	Floor mean	72.22	66.72	69.47

Hence it may be concluded from above findings that Karanja seed extract may be used for management of house dust mites in Lambani households, as these are the herbs having good acaricidal properties which are easily available and also affordable.

KEY WORDS House Dust Mites. Herbal Extracts. Mortality.

ABSTRACT The study of management of house dust mites with herbal extracts in Lambani households was carried out in Dharwad district during 1997-98. Results revealed that the leaf extracts when applied with 1:100 dilution, resulted in low per cent of mortality of house dust mites. Hence leaf extract was not used for further study. When seed extracts were used mortality rate of house dust mites was between 60 and 80 percent. From among the seed extracts the mortality rate was more in Karanja (79.04%) Followed by castor (67.39%) and Neem (61.98%). A significant difference was observed for mortality between the types of floor and the seed extracts in the management of house dust mites.

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