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# Documentation of Village Pharmacy as Ecto Parasite Control

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**Abstract:**

*The study was conducted during the year 2010 on the documentation of village pharmacy for controlling ecto-parasites on buffalos in certain areas of district Hyderabad. In all 50 buffalo farms were visited and the animals were examined for infestation of ticks, lice, flea and mites etc. Moreover, the village pharmacy for the control of ecto-parasites was also documented. The results of the study indicated that out of 50 buffalo farms, the infestation of ticks, lice and both ticks and lice was recorded on 15 (30%), 12 (24%) and 17 (34%) farms, respectively; while 6 (12%) were free of ecto-parasitic infestation. Flea and mites infestation was absent from the studied farms. In case of village pharmacy, 13 (26%) farmers used village pharmacy for the control of ticks and lice, 14 (28%) used village*

*pharmacy for treatment of animals against ticks only, while for controlling lice 10 (20%) farmers used the village pharmacy. Out of 37 ecto-parasitic infested buffalo farms, 62% used Naas and sour oil, 19% used Naas and sweet oil, 11% used Kerosine oil, 5% used Paste of mud, while Ginger was used by 3% buffalo farmers against ecto-parasites on their buffalos. It was also informed by the buffalo farmers that Naas and sour oil/sweet oil were mixed together and applied on the infected body area by ticks and lice; while Kerosine oil was used by rubbing on body region infected by ticks and lice. Similarly, for controlling ticks and lice, paste of mud was also used by rubbing on the area with ticks and lice; while ginger has also been in use for controlling ticks and lice by extracting its juice which was applied on the infected body region of the animals.*

**Key words:** Village Pharmacy, Ecto Parasite Control

## Introduction

Ectoparasites are ubiquitous, often highly damaging and in most cases cannot be permanently eradicated; hence, they must usually be managed at a local scale with insecticides or endectocides. However, the growth in resistance, the slow rate of development of new actives, coupled with environmental and health concerns associated with the continued use of some of the existing neurotoxic insecticides, suggest that more sophisticated approaches to their management need to be identified. These approaches need to allow ectoparasite populations to be maintained at acceptable levels, while conserving the compounds that remain available. The development of integrated approaches, in which cascades of management tactics are deployed, with parasiticides available as one component to be used in requisite circumstances, may be the most appropriate route to achieving this aim. An essential element of such an approach is the clear articulation of the purpose of intervention and rational justification of the time-

point and manner in which it is attempted. However, for this to be possible, considerably better information is required about the effects of ectoparasite abundance on animal welfare and productivity, in addition to the greater availability of effective alternative control tools (Richard Wall, 2007).

Ectoparasite infestations are best prevented by thorough screening and quarantine of all new animals entering a collection. Ectoparasites are those which live on skin or attach to hair follicles. The major external parasites are ticks, mites, fleas etc. Transmission of all the above ectoparasites can be by host to host or fomites to host. Fortunately with proper husbandry and persistent treatment they do not have to pose a problem (Wikipedia, 2010).

A limited number of ectoparasites are seen, except on wild and newly acquired reptiles. Mites are distributed worldwide, and most reptilian species are affected. Reduced vitality and, in heavy infestations, death due to anemia may occur. Skin of affected reptiles appears coarse, and dysecdysis is frequent. The mite is <1.5 mm long and is often found near the eyecaps, gluttal folds, or any other indentation on the reptile. Mites may also be associated with mechanical transmission of *Aeromonas hydrophila*, a variety of other bacteria, and rickettsial agents, and they very likely act as a vector in inclusion body disease of boid snakes (Merck, 2010).

Ticks are frequently found on reptiles, and heavy infestations may result in anemia. Argasid ticks may cause paralysis, with muscle degeneration at the site of the bite. The transmission of green-lizard papilloma-associated virus, several hemogregarines, and the filarid worm *Macdonaldius oscheri* has been associated with ticks. Ticks can be removed manually. Systemic antibiotics are often indicated due to systemic infections associated with multiple cutaneous bite wounds and, potentially, with transmission of pathogenic bacteria (Matthews and Bernard, 1998).

Mites are visible to the naked eye but are hard to see in small numbers. If mites are suspected, gently rubbing the reptile while it is standing over a piece of white paper will allow the mites to be seen after they have fallen off. Affected reptiles often spend an inordinate amount of time soaking to drown the mites. Examination of the water dish can reveal the drowned remains of many mites. The gluttal folds, involutions around the face, and the space between the eye and its orbit are favored areas and should be inspected carefully (Halliday *et al.* 2000). Flea is the common name for insects of the order Siphonaptera which are wingless insects with mouthparts adapted for piercing skin and sucking blood. Fleas are external parasites, living by hematophagy off the blood of mammals (including humans) and birds (Hoell *et al.* 1998).Villagers, particularly in Pakistan have been using classical practices to control ecto-parasites, however, their documentation is not availble. This study is proposed to develop a document village pharmacy in practices.

Control of ectoparasites on domestic animal has been attempted using flea collars containing various insecticides. The ectoparasites, however, remain present in the general vicinity of the animal, such as within the house of a pet owner. The eradication of ectoparasites within the animal environment is difficult unless the environment is permanently covered in an insecticidal substance, in which case toxicity and reinfestation are problematic. Thus, there is a need in the art for persistent and effective agents for eradication of ectoparasites on a domestic animal in order to reduce the periodicity and the cost of anti-ectoparasite agents, wherein such agents must be convenient to store and apply, and present insignificant risk of toxicity to such domestic animal and its environment. Therefore the present study has been planned to investigate the documentation of village pharmacy on ecto-parasite control.

## Materials and Methods

A survey study was carried out to document the village pharmacy for the control of ectoparasites on livestock in and around Tandojam. For this purpose, a well defined data recording sheet was developed for recording the prevallence of ectoparasites on different livestock species. Moreover, a questionaire were developed for the village farmers for obtaining information on the use of local medicine which may include various plant extracts or other medicine they commonly use for the control of ectoparasites. The farmers was also be enquired for techniques other than medicines for the control of ectoparasites.

Overall 50 respondent farmers were selected having livestock including buffalo and cattle. These 50 respondents was selected randomly from three villages, 10 from each village, and remaining 20 farmers was selected from the Tandojam town as well as surroundings of the town to collect the needed information. After completion of the data collection process, the data were subjected to statistical analysis and in view of the statistical outcomes, the results was interpreted and included in the project report.

## Results

The present study was carried out during study period on the documentation of village pharmacy for controlling ecto-parasites on buffalos in certain areas of district Hyderabad. In all 50 buffalo farms were visited and the animals were examined for infestation of ticks, lice, flea and mites etc. Moreover, the village pharmacy for the control of ecto-parasites was also documented. The results on the above parameters are presented in Tables 1-5 in the following pages:

## Distribution of farms according to ecto-parasitic species

According to the study plan, the infestation of ticks, lice, flea and mites was to be investigated on animals at different buffalo farms, but it was noted that flea and mites were absent and not a single animal was found under infestation of these two species; while ticks and lice were the commonly prevalent ecto-parasitic species on buffalos (Table-1). At 15 (30%) buffalo farms only ticks infestation was recorded; while at 12 (24%) farms, only lice infestation was frequently recorded. However, at 17 buffalo farms (34%) both lice and ticks infestation was recorded. However, there were 6 (12%) buffalo farms which were entirely free of any of the ecto-parasitic infestation. It was noted that generally, presence of ticks and lice on animal body is ignored and less considered for the treatment; but these parasites put the animals heavily in loss of their health.

**Table-1 Number of farms visited.**

| S.No. | Number of farm visited | Tick infected farms | Lice infected farms | Lice and ticks infected farms | Flea infected farms | Mites infected farms | Farm where no ecto parasites infestation found | Total |
|---|---|---|---|---|---|---|---|---|
| 1 | 50 | 15 | 12 | 17 | - | - | 6 | 50 |
| 2 | | 30% | 24% | 34% | - | - | 12% | 100% |

## Distribution of farms according to use of village pharmacy

The adoption of village pharmacy for the control of ticks, lice, flea and mites was assessed and the outcomes are presented in Table-2. It was observed that out of 50 buffalo farms surveyed, 37 (74%) farmers were found in using various village pharmacy techniques, while remaining 13 (26%) did not adopt village pharmacy for control of various ecto-parasites. The results further showed that 10 (20%) farmers adopted village pharmacy for the control of lice, while 14 (28%) farmers adopt village

pharmacy for the control of ticks on their animals. Moreover, 13 (26%) of the buffalo farm operators in the study area adopted village pharmacy both for the control of ticks and lice. However, it was known that ticks were more prevalent on buffalos even at commercial farms as compared to lice.

**Table-2 The number of farms where village pharmacy were used for the control of ectoparasites infestation**

| S.No. | Number of farm visited | Ticks and lice | Ticks | Lice | Flea | Mites | Total |
|---|---|---|---|---|---|---|---|
| 1 | 50 | 13 | 14 | 10 | - | - | 37 |
| 2 | | 26% | 28% | 20% | - | - | 74% |

## Local pharmacy used

The kind of village pharmacy for the control of ecto-parasites (ticks, lice, flea, mites etc.) was enquired from the buffalo farm operators and the results are presented in Table-3. It was observed that Naas and sour oil was used by 23 (62%) buffalo farm operators for the control of ecto-parasites; while 7 (19%) of the farm operators used Naas and sweet oil for the control of ecto-parasites from their buffalos. It was further known that 4 (11%) buffalo farm operators used Kerosine oil to prevent or kill the ecto-parasites on their buffalos, while Paste of mud was used by 2 (5%) buffalo farmers in the study area for dealing with the ecto-parasites. It was noted that Ginger was also one of the measures to control parasitic infestation, and 1 (3%) of buffalo farmers applied ginger juice against the parasitic infestation on their animals.

**Table-3 Local pharmacy used and their percentage**

| S.No. | Treatment used | Number of farms | %age |
|---|---|---|---|
| 1 | Naas and sour oil | 23 | 62% |
| 2 | Naas and sweet oil | 07 | 19% |

| | | | |
|---|---|---|---|
| 3 | Kerosene oil | 04 | 11% |
| 4 | Paste of mud | 02 | 5% |
| 5 | Ginger | 01 | 3% |

## Techniques of using village pharmacy against ecto-parasites

The use of village pharmacy depended on the kind of treatment and out of 50 buffalo farms visited, 37 buffalo farm operators adopted local pharmacy to treatment their buffalos against ecto-parasitic infestation; and the results on these characteristics are presented in Table-4. The results in Table-4 illustrated that Naas and sour oil/sweet oil were mixed together and applied on the infected body area by ticks and lice; while Kerosine oil was used by rubbing on body region infected by ticks and lice. Similarly, for controlling ticks and lice, paste of mud was also used by rubbing on the area with ticks and lice; while ginger has also been in use for controlling ticks and lice by extracting its juice which was applied on the infected body region of the animals.

**Table-4 Techniques of treatment used at different farms for the control of ectoparasites infestation.**

| S.No. | Ectoparasites infestation | Treatment | Techniques of treatment | Number of farms |
|---|---|---|---|---|
| 1 | Ticks and lice | Naas and sour oil | Are mixed and applied on infected area | 23 |
| 2 | Ticks and lice | Naas and sweet oil | Are mixed and applied on infected area | 7 |
| 3 | Ticks and lice | Kerosene oil | Rubbed on infected area | 4 |
| 4 | Ticks and lice | Paste of mud | Paste are rubbed on area with ticks and lice are found | 2 |
| 5 | Ticks and lice | Ginger | Juice are applied on infected area | 1 |
| 6 | Flea | - | - | - |
| 7 | Mites | - | - | - |

| | | | | |
|---|---|---|---|---|
| **Total** | **7** | **5** | **5** | **37** |

## Discussion

Ticks, lice, flea and mites are ecto-parasites of great economic importance and the infested ruminants often become anemic. It is imperative to be managed at a local scale with insecticides or endectocides. The development of integrated approaches, in which cascades of management tactics are deployed, with parasiticides available as one component to be used in requisite circumstances, may be the most appropriate route to achieving this aim (Richard Wall, 2007).

In Pakistan villagers have been using classical practices to control ecto-parasites, however, their documentation is not availble. Therefore the present study has been planned to investigate the documentation of village pharmacy on ecto-parasite control. The results of the present study indicated that ticks and lice were found infesting buffalos at most of the farms, and no flea and mites were found. The kinds of village pharmacy used were Naas and sour oil, Naas and sweet oil, Kerosine oil, Paste of mud and Ginger. Naas and sour oil/sweet oil were mixed together and applied on the infected body area by ticks and lice; while Kerosine oil was used by rubbing on body region infected by ticks and lice. For controlling ticks and lice, paste of mud was also used by rubbing on the area with ticks and lice; while ginger has also been in use for controlling ticks and lice by extracting its juice which was applied on the infected body region of the animals. These results are partially in concurrence with those of Alberto *et al.* (2006) who reported that ecto-parasites can cause direct damage to their hosts by their annoyance, irritation, blood feeding, modification of host behavior, and invasion of tissues. This direct damage can result in such direct losses as dermatitis, anemia, and reduction in weight gain performance, devaluation of carcass, injury during pest avoidance, injury by chemical control of pests, necrosis,

and death. Similarly, Olaf *et al.* (2006) evaluated the efficacy of a topical formulation containing imidacloprid and permethrin for eradication of a patent flea (*Ctenocephalides felis*) and mite (*Cheyletiella parasitovorax* and *Listrophorus gibbus*) infestation in rabbits and topical formulation of imidacloprid and permethrin was a practical and well-tolerated means of treatment for flea infestation in rabbits. In another study, Whelan (2006) described a fluid comprising one or more fatty acid esters of a mono-, di-, tri- or polyhydric alcohol or lower alkyl ether of a glycol as, a topical treatment for the eradication of ectoparasites and arthropods. Jess *et al.* (2007) used alternative methods with formulations of insecticides, macrocyclic lactones and growth regulators against sheep ectoparasites; while Plant (2007) discussed the role of sheep veterinarians in reducing or eliminating animal welfare problems associated with sheep ectoparasites and highlighted the correct application or use of the correct chemical at the correct time to control these parasites, which is feasible on farm. Sound ectoparasite control and eradication programs are an important way of achieving this.

Considerable research has been found published on the village pharmacy to control ecto-parasites. Thamsborg and Roepstorff (2007) compared the efficacy of ivermectin, doramectin and *Azadirachta indica* (neem) leaves against tick infestation in cattle and concluded that ivermectin is drug of choice against ecto-parasites of cattle. Similarly, Cuisance *et al.* (2008) used different kinds of chemicals to control ecto-parasites and principal control methods applicable to the major groups of ectoparasites of veterinary interest. Guerino *et al.* (2008) provided formulations and methods useful in the control of ectoparasites on a domestic animal, using a formulation comprising Indoxacarb and a veterinarily acceptable carrier that is applied topically to 10% or less of the total surface area of a domestic animal. Other embodiments include these formulations also including one or more additional pesticides

such as fipronil. In another rstudy, Mark *et al.* (2009) concluded that ectoparasites and their pathogens, especially those originating from free-roaming animals, present a potential threat to captive animals and humans. It is imperative to control these ecto-parasites at local level by locally available medicines mostly extracted from the plants. The studies conducted by Pandita and Ram (2009) concluded that sprays of 1.0% malathion and 0.5% BHC also showed a good response, leading to eradication within 2 days. This treatment was effective for up to 33 days for ticks and 31 for mites. Lice were effectively controlled by dusting with 10% DDT plus hay ash in equal parts, which removed 56% of lice from the goats. Similarly, Paul *et al.* (2009) provided an ectoparasite control composition for topical application to the hair coat or fur of a domesticated animal or household pet, such as a dog or cat, to control ectoparasites, such as fleas or ticks. In another aspect, the invention provides an applicator package for applying an ectoparasite control composition, in the form of a molded stick, by rubbing or spreading it on the hair coat of such animal and thereby coating it with the composition.

## Conclusions

After going through the results in detail, it was concluded that:

- Ticks and lice were found infesting buffalos at most of the farms, and no flea and mites were found.
- The kinds of village pharmacy used were Naas and sour oil, Naas and sweet oil, Kerosine oil, Paste of mud and Ginger.
- Naas and sour oil/sweet oil were mixed together and applied on the infected body area by ticks and lice; while Kerosine oil was used by rubbing on body region infected by ticks and lice.
- For controlling ticks and lice, paste of mud was also used by rubbing on the area with ticks and lice; while ginger

has also been in use for controlling ticks and lice by extracting its juice which was applied on the infected body region of the animals.

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