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Alternative Control Methods of Ectoparasites on Dogs

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Abstract: **Ectoparasites found on the dogs were collected and they were identified, based on their morphology. The effect of different natural products was used against the ectoparasites and their actions were studied. The natural herbs were fumigated around the cage and the cage was washed with the natural preparation and it showed a good reduction in the number of mosquitoes, flies ants, etc around the cage of the animal and also near to habitat of the animal. In the present work a detailed study on the ectoparasite collected & found on the dogs were done and the natural herbs such as neem, turmeric, camphor etc were used against the ectoparasites. It is found that the this treatment was very much effective against the parasites and after the treatment for a long time there was not attack of ectoparasites or irritation was not there on the dog. They were very excellent in the removal of ectoparasites on the dogs.**

Keywords: **Ectoparasites, PlantExtractions, Ctenocephalides felis, Rhipicephalus sanguineus Sarcoptes scabiei, Dog breeds.**

1. INTRODUCTION

All dogs can become allergic to fleas, The harmful effects of ectoparsites on the dogs have been a serious matter of discussion for long time wide variety of insecticides had been used for controlling ectoparasites, even though insecticide had been used and its continuous use causes skin rashes some other irritations and some may not works effectively. A successful parasite never kills or harms its host, but lives in harmony with it. This is because, in the majority of cases, there exists equilibrium between the parasite, host and environment. Also there is an elaborate compromise between the parasite and its host for extracting some essential biological requirements for maintenance and propagation of the parasites, without adversely affecting the vitality and numerical abundance of the host. However, some parasites are harmful or disease causing which are known as pathogenic parasites or pathogens. Energetically parasitism is distinct from predation, even though both are antagonistic (negative) relations. As Charles Ecton has remarked "predators live on the capital and parasites lives on the income".Ecologically, parasitism is very significant in that it plays some role in regulating population size and also in maintaining the balance of a nature. This is because parasites and their host mutually regulate their population size to maintain a steady state or dynamic equilibrium.. A shift in this equilibrium in any direction would be disadvantageous to one or the other.

An ectoparasite is a parasite that lives on the outside of a dog's body rather than on the inside. There are many different varieties of ectoparasites but we will focus on just a few species of fleas, ticks and mites.Ectoparasites come from the phylum *Arthropoda*, which includes insects, arachnids and crustaceans. Fleas are parasitic insects, while ticks and mites are both parasitic arachnids. Each of the ectoparasites presented here have a number of things in common. The cat flea *Ctenocephalides felis*, the brown dog tick *Rhipicephalus sanguineus* and the mange mite *Sarcoptes scabiei* are ubiquitous; they can be found worldwide. All three are frequent parasites of dogs that are also of medical concern to humans either directly or as vectors (carriers) of other parasites. Each lead complex lives made up of different morphological stages, and

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each relies on the host to carry out some if not all of its life cycle, The main aim of study was is to give the scientific evidence of effectiveness of alternative method to control ectoparasites

2. MATERIALS AND METHODS

2.1Materials Required: Neem leaves, Neem oil, Turmeric (powder or fresh one), Tulasi leaves, Coconut oil ,Alovera , Salt ,Soot from the base of cooking vessel, Water, Incense, Coconut husk, incesnce,Camphour ,experimental animal with ecto parasites, gloveses, vessels, sprayers .

2.2Extraction of leaves: The extractions of the leaves were done in water and coconut oil. The extract was made according to the breed of dog (short breed, heavy breed and the large breed).by using above mentioned content i prepared 6 mixtures, for the application on dog's body.

2.3Medicinal plants used for the treatment: Neem, Thulasi ,Camphor (*Cinnamomum Camphora)* ,Turmeric, Alovera

2.4Breeds used for my work: Dash hound, French bull dog, Rotwhiler and J.spitts.

Even though some breeds of the dogs are tick resistance, their surroundings and the polluted situations and uncleaned habitats made the ectoparasites to infest on the dogs especially on tick resistant variety..

2.5Area of Study: Kanimangalam and Chittessery.(**Selected areas of Thrissur)**

2.6Collection &Identification of Specimens:

The ectoparasites were collected from the animal by brushing and by hand picking, these specimens were transefered from the collected bottle to bottle in which the formalin soaked cotton and arranged the similar one in the first vision in a bottle and different one in each bottles. This was taken to the Parasitology department of Mannuthy Veterinary College and was i identified. That collection included the Common brown Tick and the Fleas.

3. OBSERVATION&RESULTS

Table: 1 Showing The Breeds Studied

Sl no.	breed	sex	age	Caged/uncaged	ectoparasites
1	GDS	m	2	caged	Not found at present
2	DOBERMAN	f	3 and ½ months	caged	Not found at present
3	"	m	4	caged	Not found at present
4	J.spitts	f	6 months	caged	2/3 were found around the eye region
5	PUG	f	8 months	Inside the house	Not found at present
6	FRENCH BULLDOG	f	6 months	Inside the house	Not found at present
7	"	m	"	caged	Present in the year
8	GSD	f	8	chained	Found
9	"	"	5	Caged/chained	Present in the year
10	LAB	f	7	caged	Fleas are found

3.1Application of the mixtures:

The mixtures were prepared according to the breed of the and applied on its body and made the dog to stand under the sun for 15-20mnts, and washed the dog using herbal shampoo or neem soap and dried, also the extract of neem leaf was prepared and sprayed in the dogs cage and washed it with water. Complete removal of the ectoparasite was not noticed.

Symptoms: Appearance of the ectoparasites on the body can been seen through our naked eyes, .

Frequent rubbing the body on rough surface. Rubbing the body on Sunny floor or ground.

Frequently lying on hot grounds. Biting on the body parts were the ectoparasites are found.

Weight loss and appetite Weakness and Paralysis. Hair loss Reddish round spots.

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Hairs become a hump like structures where the ectoparasite is found. Some dogs will crawl on the ground. Bleeding from the wounds and after some days puss formations.

3.2 Treatments for Ectoparasites:

In our study natural products to control the ecto parasites of the dog. Natural product is more skin friendly to the dog and has got a good effect on the body of the dog constant use of insecticides cause skin rashes ,discolouration of skin, formation of round spots, some of the insecticide process irritation to animal's eye ,watery eye, sneezing ,irritation ,etc. Over dosage of insecticide causes fatigue, irritation to the dog, paralysis, sometime, it may cause death. So we decided to switch on to the natural products. It was very effective and the result was excellent. Till one year after the usage of these natural products there were no ectoparasites, even from flies.

When this mixture was applied on the ground around the animals' habitat, it showed very repellent action against ants, flies, ectoparasites' breeding. We prepared six mixtures and applied on representatives of canine family. the main breeds selected for the experiment .

TABLE; 2 Showing .Individual Actions Herbs

		Action of the herbs				
Sl No	herbs	Repellant	Dead	Paralyzed	killed	side effects
1	Neem	+	-	+	-	NIL
2	Turmeric	+	_	_	-	NIL
3	Tulasi	+	_	_	_	NIL
4	Neem Oil	+	+	+	_	NIL
5	Coconut Oil	-	_	_	_	NIL
6	Alovera	+	_	_	_	NIL
7	Camphour	+	_	_	_	NIL
8	A)Kerosene B)Soote	a)+	+	+	+	a)yes b) NIL

Table; 3 Showing Synergetic Actions Of Herbs

Sl.No	Mixtures	**Action Of The Herbs**					
		Repellant	Dead	Paralyzed	killed	side effects	
1	Mixture A: Neem oil Turmeric powder	+	_	+	_	Nil	=
2	Mixture B: Champour+Coconut oil	+	_	+	_	Nil	
3	Mixture C: Neem oil Turmeric powder+Tulasi+Champhour	+	_	_	_	Nil	
4	Mixture D: Neem oil +Turmeric+ Camphor	+	_	+	_	Nil	
5	Mixture E :Neem leaf-paste+Kari-powder+Turmeric powder+ Coconut oil+Kerosene-+Tulasi+ Salt +Alovera	+	+	+	+	Nil	

4. DISCUSSION

When we applied above prepared mixtures and by fumigation methods, it is noticed that the Ectoparasites were completely removed from the dogs body and the animal become free from its attack for a long time. Here we noticed that after the application of the mixture number 6, the animal was free from the ectoparasite attack for the last one and half years. In the dog the primary lesions are discrete crusted papules which cause intense pruritus. The most important damage, however, is subsequently inflicted by the animals themselves, in scratching and biting the affected areas, to produce areas of alopecia or of moist dermatitis ('wet eczema'). In older dogs, which have been exposed for many years, the skin may become thickened, folded and hairless, and in these animals the pruritus is much less intense. Flea- allergy dermatitis is one of the most common causes of dermatological disease of dogs and cats. Dermatitis associated with

allergy to flea bites is characterized by intense prutius and reddening of the skin, with itching persisting up to 5 days after the bite, the resultant licking. Chewing and scratching can lead to heir loss, self- induced restlessness, irritability and weight loss, though the intensity of irritation varies greatly with the individual attacked.

All dogs can become allergic to fleas, though atopic dogs are predisposed to developing reactivity. One bite may be sufficient to cause an allergic reaction. Intermittent flea exposure encourages development of flea allergy, while continual exposure appears to protect against it, as does contact with fleas at an early age. Though little is known about the allergens responsible for evoking the allergic response, recent findings suggest that multiple proteins are important in flea –bite hypersensitivity. Fleas are vectors of a range of viruses and bacteria and pathogen transmission is enhanced by their promiscuous feeding habits. Most species of flea are host- preferential rather than host- specific and will try to feed on any available animal. Fleas act as intermediate hosts for the common tapeworm of dogs. Dog is the primary hosts *of R. sanguineus* ticks and their presence is possibly a necessary condition for the maintenance of large tick populations. (Dantas Torres 2008). In spite of this, the parasitism by *R.sanguineus* ticks on hosts other than dogs appears to be rare in certain areas where they occur; it is likely to be a consequence of factors such as an explosive growth of tick populations that would lead to high levels of environmental infestation and then increasing risk of tick exposure can be found in the Ticks base.

Although the brown dog tick seldom bites humans, the increasing number of cases of human parasitism by *R. sanguineus* ticks reported in the literature suggests that it may be more common than it is actually recognized Most ixoded ticks exhibit exophilic behaviour; that is, they tend to rest outdoors. Conversely, *R. sanguineus* ticks are often endophilic, i.e., they are often found indoors. They have a strong tendency to crawl upward and they can be seen climbing the walls of infested houses In highly infested domicils, *R. sanguineus* ticks can be found crawling on carpets, on walls, and on furniture (Dantas- Torres ,2008). The off- host tick stages may hide in any kind of cracks, usually close to the host sleeping or resting place Data about the off- host ecology of ixodes ticks is fundamental to better understanding their natural history. Moreover, a better understanding of the tick ecology can provide useful insights into the dynamic of certain tick- borne diseases.(Gracia et al; 2008).

Dog exposed to successive infestations by R. sanguineus ticks fail to develop a delayed – type hypersensitivity (DTH) response, which also indicates a deficient cell- mediated immune response. Silveria et al. (2009) postulated that the tick saliva inhibits the differentiation and maturation of dendrite cells into functional antigen- presenting cells. A similar, non-effective response is observed in mice exposed to successive infestations by R. sanguineus ticks. By contrast, guinea pigs display a strong cell-mediated immune response against successive infestations by *R. sanguineus* ticks and they have been used as models resistant hosts Sequential histopathology at the *R. sanguineus* tick feeding site reveals that dogs react mainly with neutrophils (mast cells and mononuclear leukocytes are also present), whereas guinea pigs react with mononuclear cells, eosinophils, and basophils(Arlian & Mohar:1988) .Dogs appear to develop no resistance to *R.sanguineus* reinfestations by ticks, as resistant hosts like guinea pigs do .(Spady & Ostrander 2008)This suggests that *R. sanguineus* ticks have evolved salivary immunomodulatory factors to modulate the dog immune response in their benefit; similarly, dogs appear to develop no resistance against *Amblyomma cajennense* nymphs (Tinoco et al., 2009).

It is interesting to note that some dog breeds appear to be more susceptible to R. sanguineus infestations than others.(Tinoco. et al 2009) have recently found that the number of adult ticks feeding on English Cocker Spaniel dogs was significantly higher than that feeding on mongrel dogs. Similarly, we have also observed English Cocker Spaniel dogs highly parasitized by *R. sanguineus* ticks (Durden et al 2005). It has been demonstrated that number of engorged females recovered from experimentally infested beagles at the second infestation is significantly less than at the first infestation (Rust & Dryden1997). When thinking about tick control, something should be kept in mind: only ~5% of the ticks are on the dog; the remnant (~95%) is in the environment. Therefore, the effective elimination of tick populations will require an integrated control strategy, targeting the canine population as well as the environment(Gracia et al;2008).Dogs can be treated with a diverse range of veterinary preparations, such as spot-on formulations, impregnated collars, shampoos, sprays, dips, and powders (Pin et al 2006). Fipronil, amitraz, carbaryl, and pyrethroids (deltamethrin, permethrin, and cypermethrin), are among the most frequently used acaricides for controlling *R. sanguineus*, (Papazahariadoub et al.,2003). Recent advances in ectoparasiticides (insecticides and acaricides) for veterinary use have been reviewed elsewhere (Franklin ,2006).The use of acaricides on dogs is usually effective to eliminate their tick infestations and to prevent reinfestations during a certain period of time. The frequency of treatment depends on the degree of infestation and the duration of the residual effect of the acaricide. The long- term use and misuse of acaricides is a serious problem that may result in environmental pollution and acaricide resistance in the ticks (Tacone et al.,2002). The indiscriminate use of

acaricides over the years has led to the selection of resistant tick. The development of acaricide resistance is a serious problem worldwide and is well documented in other tick species, such as *Rhipicephalus (Boophilus) microplus (syn. Boophilus microplus)* (Arlian et al., 1995,Kuhn et al; 2008).

5. CONCLUSION

This tick is a good example of vector of multiple pathogens affecting companion animals; livestock, and humans. The control of *R. sanguineus* ticks in certain areas has been solely based on an indiscriminate use of chemical methods, which hassled to the selection of acricide resistant tick strains. Veterinarians play a key role and they should educate dog owners about the problems associated to an inadequate use acaricides. Any control strategy should be hased on the knowledge of the local tick ecology, which would improve the efficiency of the control program, reduce the risk of acaricide resistance and environmental pollution, and cut costs considerably. Development of acaricide resistance in this tick is a serious problem for the control of several tick- borne diseases, although the real extent of the problem is unknown. The mechanisms involved in the development of acaricide resistance in *R. sanguineus* ticks should be investigated more fully.. This issue demand s further research. A better understanding of these aspects would also be useful for the improvement of the control strategies against *R. sanguineus* ticks and the pathogens they transmit.

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