

# EVALUATION OF THE ANTHELMINTHIC ACTIVITY OF GARLIC (*ALLIUM SATIVUM*) AND BETEL NUT (*ARECA CATECHU*) IN PUPS NATURALLY INFECTED WITH HOOKWORMS

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In the present investigation, aqueous garlic cloves extract (1ml/kg b.w./day) and betel nut powder in molasses preparation (2g/kg b.w./day) individually and in combination of both (garlic cloves extract 1gm +2gm betel nut powder/kg b.w./day) were administered to the pups naturally infected with hookworms. Efficacy of these products was assessed by evaluating declining rate of eggs per gram in faeces (epg) at day 5, 10 and 15<sup>th</sup> post treatment. In all post-observation days epg declined sharply in all treatment groups but, better performance in terms of percent efficacy was observed to be 38.97 percent in combined treatment group followed by garlic (27.30 percent) and in group of pups treated with betel nut powder (14.66 percent) at day fifteen post observation.

**Key Words:** Garlic, Betel Nut, hook worms, pups

## Introduction

Garlic has been used medicinally worldwide for many centuries. Garlic has a broad spectrum of antibacterial, antifungal, antiparasitic, antiprotozoan and antiviral activity (Anthony *et al.*, 2005). Allicin the sulfur-containing compounds in garlic acts not only by killing gastrointestinal parasites but also enhances natural immunity of the host (Abells *et al.* 1999). Betel nut contains an alkaloid arecoline and active compounds which act as de-worming agents mostly on roundworms, tapeworms, pinworms and flukes. Betel nut eliminates or paralyzes parasites by alkaloid arecoline effective on tapeworms lead to liberate the head and segments of the parasite from the intestinal wall. Second, by promoting the movement of GIT reduces accumulation, and leads stagnation out by mildly draining downward and unblocking the bowels. This ability to drain downward helps expel the bodies of the paralyzed parasites (Tangalin, 2010).

In present study anthelmintic efficacy of garlic (*Allium sativum*) and Betel nut (*Areca catechu*) was evaluated in pups

naturally infected with hookworms as there is no systematic or related report is scanty.

## Materials and Methods

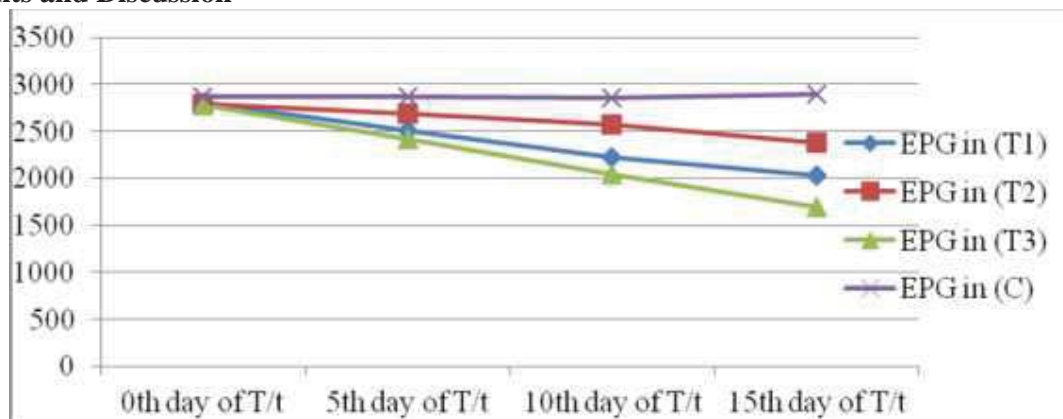
A total of twenty pups (1-2 months old), naturally infected with hookworms, were randomly selected in present investigation to determine the efficacy of *Allium sativum* (garlic) and *Areca catechu* (betel nut) to control the hookworm infection in dogs,. All the pups had history of no previous use of anthelmintics.

The experimental pups were randomly divided into four groups T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and C, five in each group. Group C were kept as control and untreated throughout the experimental period. Pups of group T<sub>1</sub> was treated with aqueous garlic extract orally at the dose rates 1g/kg b.w. /day. Aqueous extract of garlic was prepared, whereas betel nut preparation was made by freshly cut betel nut (*Areca catechu*) fruit allowed it to oven-dried at 100°C temperature for thirty minutes until the nuts become fully dried. Later it was grounded into manual grinder till it turned to powder. Then one hundred grams of powder

was mixed thoroughly with 100 gm of group T<sub>2</sub> were administered with betel nut powder at the dose rate of 2gm/kg b.w./day of betel nut powder in molasses, whereas pups in group T<sub>3</sub> were administered with both aq. garlic cloves extract and betel nut powder at the dose rate of (1gm+2gm)/kg b.w./day. Administration of treatments was carried out for fifteen days in all treatment groups.

The efficacy of each preparation was assessed in term of reduction in the number of ova (epg) following treatment in groups at day zero (pretreatment) and subsequently on 0<sup>th</sup>, 5<sup>th</sup>, 10<sup>th</sup> and 15<sup>th</sup> day post treatment. Epg was estimated by Stoll's egg counting technique.

### Results and Discussion



**Fig. -1. Post treatment ( Garlic (T1) Betel nut (T2) and combination of both-T3) changes in Mean Eggs per Gram (epg) in *A. caninum* infected dogs.**

At day 15<sup>th</sup> of post treatment similar declining trend in mean epg values continued, in all the three treatment groups. The percent efficacy was observed to be maximum in T<sub>3</sub> group (38.97 percent) followed by T<sub>1</sub> group (27.30 percent) and 14.66 percent in T<sub>2</sub> group. The analysis of variance revealed that there is significant (P<0.05) decrease in mean values of epg between different treatment groups.

The overall study revealed that percent efficacy of combination treatment with garlic and betel nut was recorded more

effective in reducing egg count in pups

The pups in In the comparative treatment trial the mean EPG findings on 0<sup>th</sup> day pre treatment in T<sub>1</sub> group, T<sub>2</sub> group and T<sub>3</sub> group ranged between 2807 to 2789 eggs per gram of faeces while it was estimated 2868 eggs per gram of faeces in untreated control group. After administration of treatment epg in all treatment groups declined sharply and percent efficacies were estimated to be 10.42, 3.73 and 12.97 percent in garlic, betel nut and combined treated groups, respectively at day 5<sup>th</sup> post treatment. On day 10<sup>th</sup> of post treatment also progressive decrease observed in mean epg values and percent efficacies were recorded 20.39, 7.88 and 26.15 in T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups, respectively (Fig.-1).

in pups infected with hook worms, in comparison to administration of sole ingredient like garlic or betel nut in present study.

However relevant reports in respect to similar work is rare but Ashraf *et al.* (2008) reported that garlic in higher dosage could be successful in reducing the number of oocytes and burdens of *A. caninum*. Tangalin (2010) found that processed mature betel nut effective anthelmintic for control of roundworm and tapeworm of poultry and

roundworms of goat and sheep. Herb society of America has designated garlic as Herb of the year 2004.

In present study, Garlic, betel nut preparations were assessed up to 14.66 to 38.97 percent efficacious in fifteen days of post treatment against hook worms in pups and assumed that may these preparation could act as inhibitor of infective stage or resist infection as mild de-wormer in long term administration. These treatments might act as slow dewormer in present study as took longer period to achieve result, so may be suggested to use these preparations as prophylactic than therapeutic medicine for achievement longer residual effect and safe results.

## References

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