



## Original Research Article

# Comparative effects of Piperazine of citrate® and papaya seeds on *Ascaridia galli* in layers Harco

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## Abstract

The present study has been realised in the farm 'protein for all' (PPT) located in Tori Sogbe in the Atlantique-Littoral province, from May to June 2011. A number of 300 layers Harco have been used for the test. They haven't been detected before the experience which was to test the anti-parasitological efficiency of citrate of piperazine® and of papaya seeds on *Ascaridia galli*. The weights of the eggs have been taken into a count before and after the treatment of the layers. The 300 hens have been separated into 6 groups of 50 hens which have been differently treated: The group 0, group of witness receives no treatment. Treatment 1 (2.5g/L of citrate of piperazine® solution) for the group 1; treatment 2 (2.5g/L of papaya seeds solution) for the group 2 ; treatment 3 (2g/L of papaya seeds solution) for group 3 ; treatment 4 (3g/L of papaya seeds solution) for group 4 ; treatment 5 (4g/L of papaya seeds solution) for group 5. At state 1, it is to say before the treatment, the average quantity of the Eggs Per Gram (EPG) are statistically the same. In other words, the situation before the treatment is identical with the 6 groups. After the treatment, it is to say at state 2, we have noticed a difference highly significative between the treatments with an efficiency rate of -50% for the witness group ; 80% for the treatment 1 ; -14% for the treatment 2 ; 4% for the treatment 3 ; 16% for the treatment 4 and 65% for the treatment 5. In conclusion, we can retain that papaya seeds, no matter what is their dosage, have reduced significantly the number of EPG comparing to the witness group. But that reduction remains lower than the one of citrate of piperazine® (2.5g/L of the solution). More over, the more the dosage of papaya seed increases, the more the reduction of *Ascaridia galli* parasitological eggs is important.

**Keywords:** citrate of piperazine®; papaya seeds; *Ascaridia galli*; layers Harco

## Introduction

Sanitary risks are the main obstacle to the development of poultry farming even though food availability is more or less favorable in Benin [1]. Indeed, the economic damage caused by parasites with a variety of parasites are very important. Among these parasites, *Ascaridia galli* is a serious threat to the chickens. For information, calculations done by Hounguévov [2] show that each *Ascaridia galli* in chickens is now responsible for a weight loss of about 15g in 3 weeks. But according Adjanohoun [3], the approach which consists in following or copying the industrialized countries using the synthetic pharmaceuticals developed or selected could be reviewed to the extent that these products are less accessible because of the sale price still galloping and purchasing power of smaller and smaller African populations. Thus, we see the realization of revenues endogenous form of revenue adopted by

some producers. But they have unfortunately no effective control structures. Based on these observations, it is essential to find ways cheap, efficient and above all accessible to our poultry. It is with this in mind that this study has been conducted.

## Material and Methods

This study is conducted in the Department of Borgou-Alibori from July to August 2011. Ripe papaya seeds were harvested in Parakou in the Department of Borgou-Alibori. They were identified in the National Herbarium of the Faculty of Science and Technology, University of Abomey-Calavi (FAST-UAC). They were then dried at FAST-UAC and then powdered. Harco laying hens were imported at level of Chicken from the Society for the Promotion of Poultry (Soproda) in France. Piperazine Citrate® is a veterinarian, manufactured by the Veterinary Laboratory LAPROVET, France. This product, made with 100g bag is



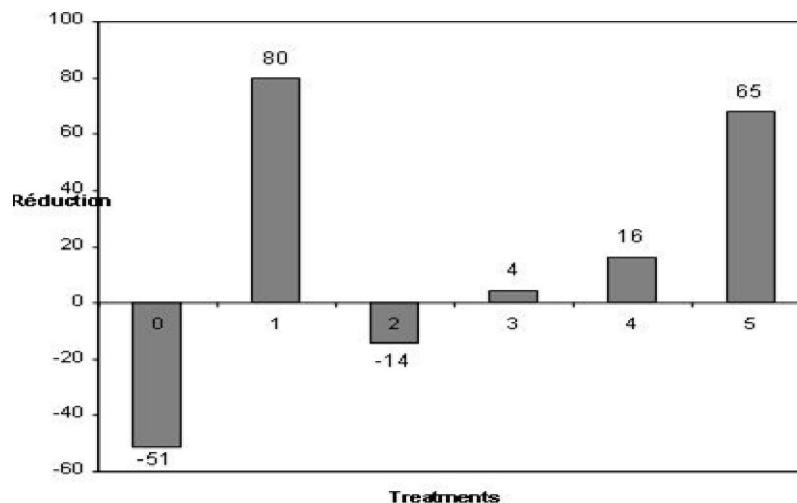
distributed to chickens in solution of 2.5 g / L. The experimental group consists of 300 laying hens Harco. They were divided into six lots of 50 chickens: group of witness receives no treatment. Treatment 1 (2.5g/L of citrate of pipérazine® solution) for the group 1; treatment 2 (2.5g/L of papaya seeds solution) for the group 2; treatment 3 (2g/L of papaya seeds solution) for group 3; treatment 4 (3g/L of papaya seeds solution) for group 4; treatment 5 (4g/L of papaya seeds solution) for group 5. The coefficient of reduction of EPG was calculated.

The feces of chickens (200 g) were collected in icebags and transported in a cooler to stool analysis at the Veterinary analytical

laboratory of the Department of Animal Production and Health of the Ecole Polytechnique Abomey-Calavi (EPAC) at the University of Abomey-Calavi (UAC). On the previous day of each session of recollection of excrement, cement paper is left in baskets in which the chickens sleep. A stool analysis was done before treatment and 2 times after the treatment at intervals of 2 weeks. *Ascaridia galli* eggs were identified using the technique of Thiempont and al. [4]. The rate of reduction of parasite eggs for each batch was calculated.

**Table 1: Analysis of fecal layers.**

Treatments	EPG average	
	Phase 1	Phase 2
0	1466.67 ± 523.87 (3.11) A	2214.29 ± 123.53 (3.33) A
1	1633.33 ± 466.67 (3.17) A	328.57 ± 17.15 (2.51) D
2	1116.67 ± 394.05 (3.00) A	1275.00 ± 165.15 (3.05) B
3	1433.33 ± 1063.15 (2,86) A	1375.00 ± 172.23 (3.08) B
4	1033.33 ± 598.84 (2.75) A	867.86 ± 179.94 (2.85) C
5	2416.67 ± 906.15 (3,28) A	771.43 ± 130.16 (2.82) C
Probability	0.71 ns	0.0001 ***
CV%	14.82	7.18
<b>Conclusion</b>	***Difference not significant at 5%	*** Difference significant at 0.1%



**Figure 1; percentage reduction of EPG by different treatments**



**Statistical analysis** was performed with the ANOVA test to compare average of EPG ; the Newman and Keuls test was used to structure these averages in case of significant difference.

## Results and Discussion

The results listed below show that Phase 1 is to say, before treatment, the average amount of EPG treatment is statistically identical. In other words, the situation before the treatment is the same at the six lots (Table 1). The experimental hens are all raised on the ground which probably contributed to the conditions of parasitism. According to Villate [5], *Ascaridia galli*'s eggs are eliminated in the outdoor environment through feces and spread by natural elements (wind and rain). They can be carried by earthworms that swallowed them but most of the time, the infection is through direct ingestion of eggs. Poor raising conditions also favor infestation. Poor raising practices could be the basis of hatch out of parasite often seen in our farming community [6]. Farmers, in the context of poultry farming in Benin have no training and use of all-out synthetic anthelmintics repeatedly which create addictions and problems of resistance in negative efficacy. This is also in this context since the work of Abu [7], it was found that 85% of developing countries use primarily medicinal plants in an infestation of birds. Thus, farmers add value to indigenous knowledge to manage the health of their birds. After the application of treatments, that is to say at phase 2 (Table 2), there is a very highly significant difference between treatments. Indeed, the witness treatment that is to say, the lot that received no treatment recorded the highest average of EPG, this contrasts with a lot who received treatment with a lower parasite load. It is statistically followed by treatments 5 and 4 (papaya seeds 4g / L and 3 g / L) that are followed by treatments 2 and 3 (papaya seeds

to 2.5 g / L and 2g / L). There is no significant difference between these two treatments which differ however from the witness group. We can mention that the papaya seeds whatever the dose used reduced significantly the number of EPG comparing to the witness. But this reduction remains small compared to piperazine citrate ® to a solution of 2.5 g / L. Note also that the higher the dose of papaya seeds increases, more significant is the reduction. The effectiveness of the papaya seeds on *Ascaris* was demonstrated by Deka [8-10], have also proven its effectiveness on infected West African dwarf sheep. The greatest reduction in parasite load was obtained with the solution of papaya seeds to 4 g / L (Figure 1) could be inferred that the papaya seed powder is effective at high doses, this can be explained by the impurities found in the seeds. However, none of these products (papaya seeds, piperazine citrate ®) has been, at different doses, reducing to zero the EPG, this confirms the work of Abu [7] where this author has shown that no anthelmintic the doses recommended is 100% effective against target pests.

## Conclusion

Stool tests carried out during the trial showed that the piperazine citrate ® used at the same concentration as the seeds of papaya is more effective in reducing the burden of *Ascaridia galli* eggs. However, the papaya seeds used to eliminate a higher concentration of parasite eggs compared to the witness group. The use of papaya seeds in the fight against *Ascaridia galli* is the problem of drug form of presentation. Powdered papaya seeds may contain impurities. It would be interesting to conduct studies at the Laboratory on the papaya seeds to extract the active ingredient for use in ascariasis of chickens.

## References

- [1]. Chrysostome C, Allard F. Enquête sérologique et parasitaire sur la pintade en élevage villageois au Bénin. 2<sup>ème</sup> journée de recherche avicole, Bénin, 1997.p. 4.
- [2]. Hounguèvou J. Essai d'utilisation des graines de papaye dans le traitement des Heterakidae (ascaridiose - héterakidiose) du poulet local en milieu réel. Cas de Ouidah Mémoire de fin de cycle pour l'obtention du Diplôme d'Etudes Agricoles Tropicales (DEAT). Lycée Agricole Médji de Sékou (LAMS), Bénin, 1999.10-37.
- [3]. Adjanooun EJ. La vie des enquêtes ethnobotaniques pour les pharmacopées africaines. *Bull. Méd. Trad. Pharm.*, 1995.3,75-83.
- [4]. Thiempont D, Rochette F, VANparus QFJ. Le diagnostic des verminoses par examen coprologique. 2<sup>ème</sup> édition, Janssen Research Foundation. Beerse Belgique, 1995. p. 29
- [5]. Villate D. Maladies des volailles. 1<sup>ère</sup> Edition, Editions France Agricole, France, 1997.p. 307.
- [6]. N' Noume L. La filière poulet dans le Sud - Bénin : Etat des lieux. Mémoire de fin de cycle Collège Polytechnique d'Abomey-Calavi/Université Nationale du Bénin (CPU/UNB), Bénin, 2001. 60- 67.
- [7]. Abou SBA. Passé, présent et perspective de l'ethnomédecine vétérinaire africaine. *Revue Méd. Pharm. Afr.*, 1994.2, 28-31.
- [8]. Deka E. Effet anthelminthique de quelques plantes sur les strongyloides du porc au Bénin. 1<sup>ère</sup> journée de recherche sur la porciculture, Bénin, 1998.p. 8.
- [9]. Affognon KJ, Zinsou FC. Essai de traitement des parasitoses gastro-intestinales par la graine de papaye chez les moutons Djallonké. Mémoire

de fin d'Etude pour l'obtention du Diplôme d'Ingénieur des Travaux (DIT). Université Nationale du Bénin (UNB), 2000.24-41.

[10]. Adoté H, Zinsou FE, Affognon KJ. Efficacité antiparasitaire de la poudre de graine de papaye (*Carica papaya*) sur les strongles gastro-intestinaux

des moutons Djallonké au Sud du Bénin. *Rev.Med.Vet. Pays trop.*, 2001. 5 , 225-229.

