RABBITS GASTRO-INTESTINAL AND EXTERNAL PARASITES IN IVORIAN IMPOROVED SYSTEM

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ABSTRACT

The aim of this study is to characterise rabbit endo and ecto parasites found in Côte d'Ivoire rabbit farms. The farms are regularly infected by various parasites. Treatments are provided without the microorganisms that are responsible being known. this work will make it possible to determine the most frequent parasites in farms and improve the health care of rabbits. 33 breading and 660 rabbits were used. Test was conducted from January to July 2019. Samples and observations were taken monthly. 66 samples were collected, 33 from growing rabbits and 33 from breeding stock. The flotation technique with NaCl was used for parasites observation. For endoparasites, 1 cestode, 2 species of trematodes, 8 nematodes and 11 species of *Eimeria* were observed. *Eimeria* oocysts were present in all samples (100%). The most common helminths were *Graphidium strigosum* and *Trichostrongylus retortaeformis* (36.36%). For ectoparasites, 6 species of ectoparasites were observed. These are 3 mites, 2 parasitic insects and fungus (*Trichophyton mentagrophytes*). The most commonly encountered ectoparasite was *Sarcoptes scabiei* (13.63%). Multiple outbreaks involving from 2 to 5 endo- associated with 1 or 2 ectoparasites were met.

Keywords: Rabbit, endoparasites, ectoparasites, Côte d'Ivoire

INTRODUCTION

Diseases caused by external parasites have disappeared in rabbit modern farms. Internal parasites such as nematodes have also disappeared in farms with good hygienic conditions. However, internal parasites that causes great loss now are coccidiosis (Licois, 2010). Rabbit coccidia are major problem in rabbit farming. It causes enormous economic losses (Henneb *and* Aissi, 2013). In Côte d'Ivoire, growing rabbit Sanitary Risk Index is higher than 50% (Kimsé *et al*, 2013; Kimsé *et al*, 2014). Thus, most breeders using antibiotics over long time to resolve digestive problems on their farm. However, there is very little improvement. In all breeding system in Côte d'Ivoire, farmers have a good perception of coccidiosis but they have poor knowledge of antibiotic therapy and the risks. The breeder do not know that the Parasites control with chemical drugs can cause to resistance problems in the farm.

Therefore, to improve treatment, studies have been carried out to identify the different *Eimeria* species and their prevalence in Côte d'Ivoire (Kimsé *et al*, 2016). During coproscopic analyzes, other pathogenic parasites were observed. The aim of this work is to identify these parasites. This study will help to facilitate establishment of effective prophylaxis plans against these parasites in rabbit farms.

MATERIAL AND METHODS

Animals and experimental design

This study was conducted in the District of Abidjan from January to July 2019. Six hundred and sixty rabbits (*Oryctolagus cuniculus*) from 33 farms were used. Ten breeding rabbits and 10 growing rabbits

were chosen by randomly from each farm visited. Sixty-six samples were composed of 33 young rabbits and 33 adult rabbits. The feces sampling was carried out monthly. Samples were humidified, packed in plastic jars and stored at 4 ° C for analysis.

Parasites identifications
Faeces parasites identification and observation were carried out by the flotation technique. In a first time, 30 g of faeces were taken. Samples were cultured in a potassium dichromate solution (2.5 %) at ambiance temperature (26-29 °C) in petri dishes equipped with moisturizer paper. the different species of coccidia were identified using the identification keys used by Boucher *and* Nouaille (2002); Licois, (2010) and Duszynski *and* Couch (2013). The flotation was carried out in a NaCl solution as described by Athraa *et al*. (2015). Secondly, another sample of 30 g of fresh droppings helped to determine other types of parasites. The same technique as before was used.

RESULTS AND DICUSSIONS

Eleven endoparasites (including *Emeria*) and 6 ectoparasites were identified.

Endoparasites infestation in growing rabbits and breeding rabbits
All classes of digestive helminths were observed. Two types of *Cittotenia sp* cestodes and nematodes 8 types were identified. The trematodes observed were *Fasciola hepatica* and *Dicrocoelium lanceolatum* (Table 1). Nematodes were *Graphidium strigosum, Nematodirus leporis, Passalurus ambigus, Strongyloides retortaeformis, Trichostrongylus sp* and *Ascaris lumbricoides. Eimeridae* was the only protozoan family observed. The diversity of parasites encountered is linked to environmental conditions. Indeed, the tropical climate and rearing system provide ideal conditions for microorganisms growth (Kimse *et al*, 2017). Similar observations were made in Benin whose climate is the same as the area of this study. However, 2 species of nematodes (*Graphidium strigosum* and *Trichostrongylus retortaeformis*) have been identified as helminths in Benin (Farougou *et al.*, 2004) compared to 8 in Côte d'Ivoire. The number of 11 *Emeria* species confirms the first results of Kimsé *et al*. (2016). The prevalence of endoparasites was higher in young rabbits (66.7 %) than breeders (48.5 %). This causes hematosis in young rabbits compared to adult rabbits (Farougou *et al*., 2004 ; Papeschi *et al*., 2013). This is related to the fragility of weaned rabbits and change of diet. At weaning, rabbit's immune system is still poorly developed. At weaning, the rabbit's immune system is still poorly developed. Therefore, animals are not able to protect themselves against most pathogens (Fortun Lamothe *and* Boullier, 2007).

Ectoparasites infestation in growing rabbits and breeding rabbits
All recorded ectoparasites consisted of 3 acarids (*Sarcoptes scabiei, Psoroptes cuniculi* and *Notoedres cuniculi*), 2 parasitic insects (*Spillopsyllus cuniculi* and *Cuterebra cuniculi*) and a fungus, namely *Trichophyton mentagrophytes* (Table 2). The most ectoparasite encountered was an acarid especially the species *Sarcoptes scabiei* (13.6 %). On other hand, the rarest species was a myiasis, namely *Cuterebra cuniculi* (6.1 %). The presence of these external parasites in the feces would be the result of contamination. This contamination would come directly from the body of infested rabbits. It would also be linked to presence of other animals in farms or also flies, which play mechanical vector role. Adult rabbits harbored more than 1.7 times ectoparasites than young rabbits. Multiple infestations of 5 gastrointestinal parasites were observed. These endoparasites were often associated with 1 or 2 ectoparasites. This polyparasitism was more pronounced in adults than in young rabbits. The presence of significant number of pathologies can be explained by the fact that coccidiosis would promote other diseases emergence by reducing rabbits immunity (Yin *et al*., 2016).

Table 1. Proportion of digestive helminth infestation in young and adult rabbits in the Abidjan District.

Digestives Parasites	Positive sample	
	Growing rabbits	Breeding rabbits
Number	*33*	*33*
Graphidium strigosum	16 (48.5)	8 (24.2)
Nematodirus leporis	0 (0.0))	12 (36.4)
Obseliscoides cuniculi	2 (6.1)	11 (33.3)
Ascaris lumbricoides	3 (9.1)	6 (18.2)
Passalurus ambigus	1 (3.0)	3 (9.1)
Strongyloides sp	8 (24.2)	14 (42.4)
Trichostrongylus retortaeformis	10 (30.3)	14 (42.4)
Dicrocoelium lanceolatum	0 (0)	2 6.1)
Fasciola hepatica	0 (0)	4 (12.1)
Cittotenia sp	0 (0)	3 (9.1)
Total*	22 (66.7)	16 (48.5)

* when a sample is positive for more than one parasite, it is counted only once; ( ) percentage of positive sample

Table 2: Distribution of young and adult rabbits ectoparasites in the District of Abidjan.

External parasites	Positive sample	
	Growing rabbits	Breeding rabbits
Number	*33*	*33*
Sarcoptes scabiei	3 (9.0)	6 (16.7)
Notoedres cuniculi	1 (3.0)	4 (12.1)
Psoroptes cuniculi	4 (12.1)	2 (6.1)
Spillopsyllus cuniculi	0 (0.0)	5 (15.2)
Cuterebra cuniculi	2 (6.0)	2 (6.1)
Trichophyton mentagrophytes	4 (12.1)	4 (12.1)
Total*	7 (21.2)	12 (36.4)

* when a sample is positive for more than one parasite, it is counted only once; ( ) percentage of positive sample

CONCLUSION

The aim of the study was to characterize rabbit parasites to improve the health monitoring of rabbits in breeding. Rabbit farms in Côte d'Ivoire are parasitized by 11 group of endoparasites and 6 ectoparasites. This polyparasitism was dominated by *Eimeria* and *Trichostrongyldae*, in particular *Trichostrongylus retortaeformis* and *Graphidium strigosum*. Endoparasitic infestations are more common in breeding rabbits than growing rabbits.

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