



## Short communication

A vaccination trial with a precocious line of *Eimeria magna* in Algerian local rabbits *Oryctolagus cuniculus*Mohamed Sadek Bachene<sup>a,b,\*</sup>, Soraya Temim<sup>a</sup>, Hassina Ainbaziz<sup>a</sup>, Asma Bachene<sup>b</sup>, Xun Suo<sup>c</sup><sup>a</sup> Superior National Veterinary School, BP 161, Algiers, Algeria<sup>b</sup> Department of Nature and Life Sciences, Dr Yahia Farès University, Médéa, Algeria<sup>c</sup> National Animal Protozoa Laboratory, College of Veterinary Medicine, China Agricultural University, Beijing, 100093, China

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## ABSTRACT

Coccidiosis is a major health problem in rabbits. A vaccine using *Eimeria* with perfect safety and effectiveness seems to be necessary to face this parasitosis. To assess the safety and the efficacy of a vaccine based on the Algerian precocious line of *Eimeria magna* against rabbit coccidiosis, twenty eight young rabbits from six litters of Coccidia free females were used to monitor oocystal excretion and body weights, they were distributed into four groups (vaccinated-challenged group, double challenged non vaccinated group, simple challenged non vaccinated group and control group). Three other Coccidia free rabbits served for the necropsy in order to compare the effect of the wild and the precocious strains of *Eimeria magna* at the histological level. Following the challenge inoculation, a statistically significant decrease of about 97% in the oocyst excretion was noticed in the vaccinated rabbits as a sign of a good immune response acquired by the vaccination associated to a good growth rate. Moreover, a statistically significant increase in oocyst output following the challenge in both double challenged non vaccinated group and simple challenged non vaccinated one was noticed: ( $1.2 \times 10^8$  and  $1.5 \times 10^8$  vs  $4.6 \times 10^6$  oocysts/rabbit respectively). Taking the control group showing a steady growth as a reference, the vaccinated rabbits showed a good growth during the experiment ( $p < 0.05$ ). Globally the challenged groups showed a normal growth compared with the control group except for a temporary decrease in weights. No case of diarrhea was recorded in the vaccinated – challenged group and the control one (neither vaccinated nor challenged) whereas more than 50% of the young rabbits from both simple and double challenged – non vaccinated groups presented diarrhea. Consequently, the Algerian precocious strain of *Eimeria magna* constitute a good candidate for anticoccidian vaccine in the future.

## 1. Introduction

Coccidiosis, a parasitosis caused by protozoa of the genus *Eimeria*, has an economic impact for poultry and livestock, including rabbits (Pakandl, 2009). The symptoms of the disease include anorexia, diarrhea, body weight loss, poor feed conversion and even death to weaning rabbits. In rabbitries, the administration of coccidiostats in feed is the most used method to obtain an efficacious prevention of the disease (Pakandl, 2009). Eleven species of *Eimeria* have been identified as pathogens of rabbit coccidiosis (Coudert et al., 1995), among them, *Eimeria magna* is recognized as a mildly pathogenic species but knowing its high frequency in rabbit breeding and the emergence of some resistant strains against robenidine, it seems crucial to use precocious strains obtained by the selection of the early oocyst output after successive passages as an immunoprophylactic strategy (Licois et al., 1995;

Pakandl, 2009). When inoculated, the wild strain of *Eimeria magna* is characterized by a prepatent period of 7 days and an excretion peak on the 9<sup>th</sup> day following the infection (Licois et al., 1995). This pathogen causes considerable economic losses due to decrease in weight gain, diarrhea and even mortality. Coccidiosis mostly affects young rabbits just after weaning (5- to 6-week-old animals) which are not protected from the immunity acquired by their mother, thereby prevention must be conducted very early between twenty and thirty days of age (Drouet-Viard et al., 1997a, 1997b, 1997c). In Algeria, very few studies dealt on local rabbit *Oryctolagus cuniculus* coccidiosis, Henneb and Aissi (2013) showed that *Eimeria magna* was the most ubiquitous species in Algerian rabbit breeding with 43%, Bachene et al. (2014) showed that the wild Algerian strain of *Eimeria magna* ( $5 \times 10^5$  oocysts/ animal) caused a weight loss of 35% compared with control group. This study aims to evaluate the protection acquired by young rabbits by testing the

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