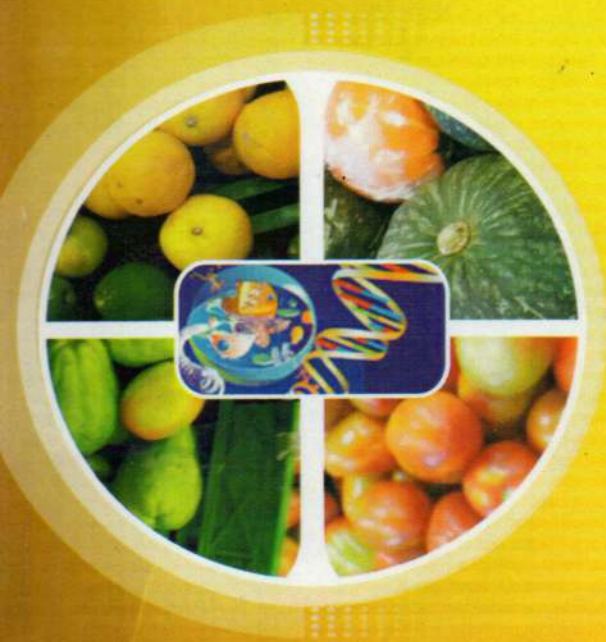




UNIVERSITAS
ATMA JAYA YOGYAKARTA
Fakultas Teknobiologi



PROCEEDING



1st International Seminar on
**“Natural Resources Biotechnology:
From Local to Global”**

September 8th – 9th 2015
Faculty of Biotechnology
Universitas Atma Jaya Yogyakarta

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Development of *Cecal Coccidiosis Immunized Chicken* for Controlling on *E. tenella* Infection by Administration of attenuated *E. tenella*

*Muchammad Yunus¹, Endang Suprihati¹, Suryanie Sarudji²

¹Department of Veterinary Parasitology, Faculty of Veterinary Medicine,
University of Airlangga, Surabaya, Indonesia,

²Department of Veterinary Microbiology, Faculty of Veterinary Medicine,
University of Airlangga, Surabaya, Indonesia
muhyunus_99@yahoo.com

1. INTRODUCTION

Coccidiosis is a disease that causes a lot of huge economic losses for poultry breeders, among others because the mortality rate is quite high, growth retardation, decreased egg production and feed efficiency and high treatment costs and labor costs [1]. One of pathogenic *Eimeria* species is *E. tenella* that cause cecal coccidiosis. The fact that there is the poultry industry, the control of coccidiosis is mostly associated with the use of routine anti-coccidiosis (coccidiostat). To overcome these conditions the option to conduct immunization approach (immunization) against chicken in controlling the disease more intensive and planned indispensable. Immunization against chickens to control coccidiosis more promising in avoiding or decreasing the reliance on the use of chemicals and other coccidiostat The previous study already constructed attenuated *E. tenella* isolate by serial passages in naïve chicken. The present study is to prove reduction of pathogenicity of those isolate.

2. METHODS

Twenty broiler chickens at two weeks old were divided into two groups, with each group consisting of 10 individuals. The first group was a positive control group, a group of chickens were administered with unattenuated *E. tenella* at a dose of 1×10^4 (UG). The second groups of chickens were inoculated with attenuated *E. tenella* at the same dose of 1×10^3 (AG). From both groups were observed characterization include: testing reproductive potential of parasite (oocyst production), pathogenicity (clinical symptom and the productivity of chickens administered with unattenuated and attenuated *E. tenella*, respectively). The data of both groups were analyzed t test.

3. RESULTS AND DISCUSSION

The pattern of daily oocyst production in chickens of each group (UG and AG) during infection was seen different (Fig. 1). In the first group (UG), oocysts were first seen at feces 168 hours after inoculation and then reached a peak of 240 hours after inoculation and decreased drastically to 288 hours and 312 hours after inoculation had no detectable oocysts in the feces. The temporal pattern of oocyst output per day confirms those previously reported [2] with this isolate of *E. tenella*. Oocyst firstly appeared on the 7 days pi, the reached peak on the 10 days pi before numbers declined rapidly and the fewest oocysts were detected on 12 days pi. On the first

group (UG), clinical signs such as blood diarrhea, appetite, lethargy were seen 5 days post infection with a prepaten period of 168 hours, whereas the second group showed consistency and colour feces appeared normal without any changes. Feed consumption, body weight gain and feed conversion were significantly different among groups (Table 1). There was significantly difference at the mean of total oocyst production between the first group and the second group ($p < 0.01$) (Fig.2). Basically, the same pattern of daily oocyst output was seen in both groups.

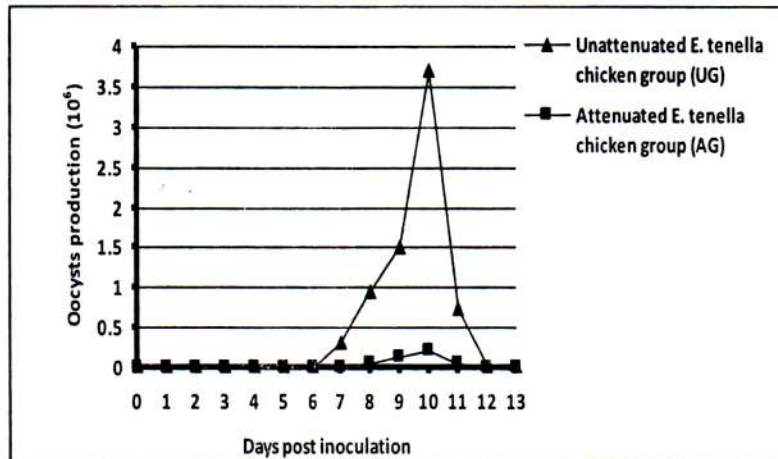


Figure 1. Pattern of daily oocyst production of Unattenuated *E. tenella* chicken group (UG) and Attenuated *E. tenella* chicken group (AG).

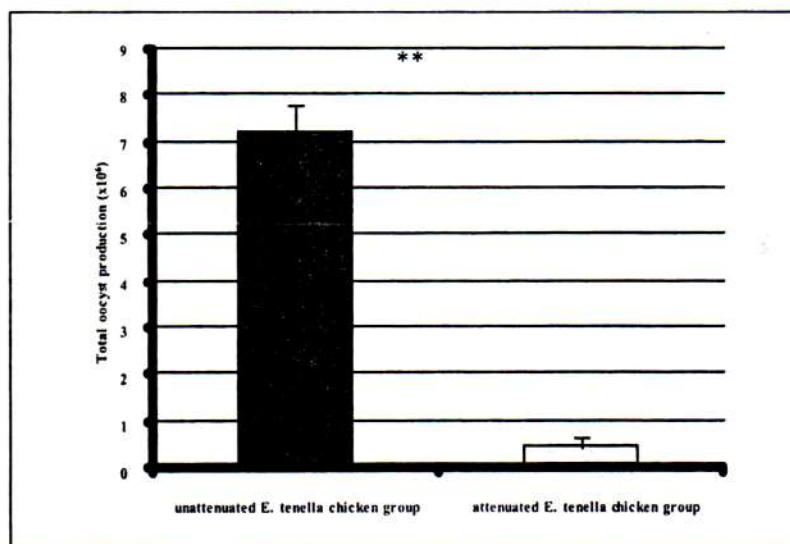


Figure 2. The comparison of total of oocysts production of Unattenuated *E. tenella* chicken group (UG) and Attenuated *E. tenella* chicken group (AG). **, $p < 0.01$

Table 1. The Comparison of Effect of Administration of Unattenuated *E. tenella* and Attenuated *E. tenella* Oocysts on Productivity aspects of broiler (Feed Consumption, Body Weight Gain and Feed Conversion) during 6 weeks

Treatment Groups	Fcs	Rw	ECv
UG	658.7 ^b ± 98.81	316.7 ^b ±77.63	2.08 ^b ±0.51
AG	922.2 ^a ± 370.58	506.7 ^a ±62.74	1.82 ^a ±0.38

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The number of intracellular parasitic stages present within the cecal epithelia were in largest number at approximately 7 to 8 days pi especially for unattenuated *E. tenella*, parent strain [3] so that oocyst production of unattenuated *E. tenella* administered chicken group (UG) was very significantly higher than attenuated *E. tenella* administered chicken group (AG). Field strain of parasite isolated show high pathogenicity, well developed and completely life cycle perform in hospes. While capacity of development and proliferation of attenuated *E. tenella* is significantly reduced by serial passages in naive chicken. Therefore, serial passages is proved to reduce pathogenicity and ability of development and multiplication in the hospes .

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