

THESIS

**THE EFFECT OF LASERPUNCTURE ON SPLEEN
SIZE, WEIGHT AND GERMINAL CENTER
DIAMETER OF BROILER CHICKEN
INFECTED BY *Eimeria tenella***



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Thesis

Submitted in partial fulfillment of the requirement for degree of
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at

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Approval of
Supervisor Comitee,



Prof. Muchammad Yunus, DVM., M.Kes., Ph.D.)

Supervisor



(Hardany Primarizky, Drh, MVM.)

Co Supervisor

DECLARATION

Hereby, I declare that in this thesis entitled :

The Effect of Laserpuncture on Spleen Size, Weight And Germinal Center Diameter of Broiler Chicken Infected by *Eimeria Tenella*

There is no other work ever published to obtain a college degree in a certain college and according to my knowledge there is also no work or opinion ever written or published by others, except those in writing referred to this paper and mentioned in the reference.

Surabaya, August 2020



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SUMMARY

Daniar. Thesis entitled “**The Effect of Laserpuncture on Spleen Size, Weight and Germinal Center Diameter of Broiler Chicken Infected By *Eimeria tenella***”, under the guidance of Prof. Muchammad Yunus, DVM., M.Kes., Ph.D. as the main supervisor and Hardany Primarizky Drh, MVM. as the co-supervisor.

Eimeria life cycle is direct and transmitted through the oral stage of the oocyst as its infective stage. It is very detrimental to farmers because clinical symptoms that occur are weight loss and decreasing egg yield, along with anorexia and poor use of feed, pale comb, and dehydration, mucus and / or bloody diarrhea (Hamid et al., 2018) cause huge losses in the world of animal husbandry. Coccidiosis control initially depends on coccidostat found in commercial food on the market, the frequent use of coccidostat can cause side effects, namely drug resistance and drug residues left in livestock products (Oematan and Kusumaningrum, 2014). The latest antimicrobial as a coccidiostat which is mixed Indonesian government's anticipation against drug resistance and food residues, Directorate General of Livestock has issued Law No. 18 of 2009 Article 22, paragraph 4c prohibiting uses of feed mixed with certain hormones and / or antibiotic feed additives (Sumanto, 2016).

Laserpuncture contains electrical impulse, it will cause chemical changes in membrane cells which results in increased permeability of sodium ions (Na) potassium (K) ions and calcium (Ca) ions to membrane cells. Ca signaling is important in the context of T cell activation and differentiation activation of T

cells can cause an increase in the IFN- γ and IL-2 (Mukti, 2015; Chen et al., 2017; Cabioğlu and Cetin, 2008). Cases of intracellular pathogens, such as coccidiosis, IL-2 will be activated and stimulate Th1. Th1 immune response activates cytotoxic T cells (CTL) to detect and destroy infected cells. CTL will target schizonts and parasitic sexual stages. IFN- γ is secreted and macrophages and NK cells are activated (Yun et al., 2000). IL-2 will then stimulate an increasing in responsiveness of B cells in the germinal center then responsive B cells will enlarge and proliferate into two groups of cells (Hardiani, 2007). B lymphocyte proliferation occurs due to the presence of antigens in the body will cause the germinal center diameter to enlarge.

This research used 35 day old chickens (DOC) divided into 5 groups. Control group (T0), infected with *E. tenella* only group (T1), treated with laserpuncture only (T2), a group treated with laserpuncture before infected with *E. tenella* (T3) and a group treated with laserpuncture after infected with *E. tenella* (T4).

This is indicated by the results of statistical data in group T2 which is higher than the other groups. Group T4 did not show a significant difference ($P > 0.05$) with group T2 in the mean value length, width, spleen weight and diameter of the germinal center. The correlation data results also showed a positive correlation ($P < 0.05$) between changes in spleen length, width and weight with changes in the diameter of the germinal center. From these data it can be concluded that it well may be presumed that laserpuncture can increase the size, weight and germinal center diameter of chicken spleen but the point of treatment is more successful

performed during infection than before infection because the data results of group T1 and T3 showed no significant differences ($P > 0.05$).