enhancement of Broiler Chiken Growth by Laserpuncture Treatment

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Enhancement of Broiler Chicken Growth by Laserpuncture Treatment

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Abstract

To observe the effectiveness of laserpuncture semi conductor treatment on broiler chicken's biometry, this research was conducted with 40 broiler chickens measuring their body weight, breast, belly, thigh circumference, and length of back as the variable. The data was analysed with Randomized design and Duncan Range Test. Laserpuncture with 0.2, 0.4, and 0.5 Joule dose had the highest result in growth circumference of different parts of broiler chicken.

Key words : laserpuncture, biometry, broilers.

Laserpuncture had been tested in farming especially for boosting cattle's growth, enhancing goat's reproductive ability, increasing the productivity of chicken and duck also for controlling diseases (Vinck, *et al*., 2003).

Adikara (2017) in his research states that laserpuncture can be used for manipulating biological process of livestock such as increasing the weight and the reproductive ability by shooting the laser to acupoint (acupoint) or receptor on the chicken (Adikara, *et al*., *loc. cit*). An acupoint is specifically designated location on the body surface. According to Chinese medical concepts, the points are not isolated sites on the surface of the body of humans and animals, but are linked with visceral organs (Schlager, *et al*., 1998).

Increasing the growth of a chicken can be done by stimulating 3 acu points. The first acu point is lung point, to increase the oxygen capacity of the body and optimize the metabolism and the cellular respiration (Julian, *et al*., 1992). The second acupoint is cardiac point which is connected to the improvement of the capacity of the blood circulation. The third acupoint is digestive point, for increasing gastric performance in digesting and absorbing food. Additional stimulation will be given to immune point to reinforce the immune system of the chicken (Adikara, *et al*. *loc. cit*).

The objective of the research is to study the effect of laser puncture to the growth rate of broiler chicken. The result of this research will contribute scientific information about the benefit of using laserpuncture in farming, especially for poultry.

Materials and Methods

Hundred Day Old Chicks (DOC) of Cobb broilers were quarantined for six days. After six days, their body weight were recorded and separated into 6 groups from these, forty chickens were randomly allotted to the experiment. The chickens were divided into groups T0, T1, T2, and T3 consisting of 10 chicks each, the effective energy dose for the laserpuncture is suggested around 0,1 – 0,5 Joule. T1 got 0,2 Joule laser treatment, T2 got 0,4 Joule and lastly T3 got 0,5 Joule. All of the chicks were provided *ad libitum* feed and water, commercial feed was used for feeding the chicks.

Laser with 20 mW capacity is used in this study. The broiler chicken were restrained for easy handling during laser treatment.

The laserpuncture were shot in 4 acupoints (Fig 1) there are *Hu Men* point to increase the appetite and the digestive system activity (Shang, *et al*. 1989). *Bei Ji* point, to improve cardiac and lungs capacity to increase oxygen consumption and better blood circulation. *Gou Hou* point, to increase growth by enhanced secretion of growth hormone. *Wei Gen* point, to improve the chicken's immune system (Deadman, *et al*., 1998). The laser treatment

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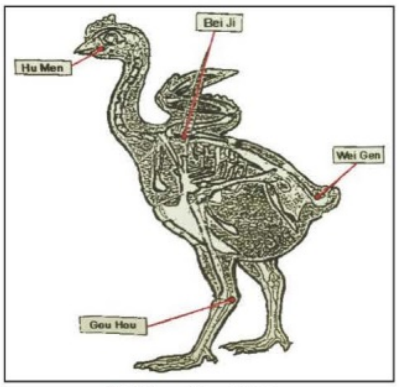

Fig 1 Acupoints on Chicken

was done on the *dexter* and *siniter* side for *Hu Men*, *Bei Ji*, and *Gou Hu* point, unlike the *Wei Gen* point which only exists in one place. The laser stimulation on growth acupoints was done once in every seven days (Liu *et al*., 1995).

The effective dose in acupuncture is the energy that goes through the acupuncture point. The formula for the dose is energy (Joule) = power (watt) x time (second). The recommended dose for stimulating process in laserpuncture is 0.1 – 0.5 Joule for the optimum result, bigger dose than 0.5 Joule is more suited for sedation treatment (Ross, J., 1995). The calculation energy for each treatment was done as per (Hurwitz, *et al.,* 1980).

Laserpuncture treatment for livestock is meant for creating a balance biological condition to optimize the organs capacity, resulting better production and improving reproductive ability in livestock (Adikara, *et al. loc. cit*).

Seven days old chicken were measured for its weight and body sizes before the laser treatment. The body sizes that were measured are breast, belly, and thigh circumferences, and length of back. Measuring the breast circumference was done by using measuring body right after the *posterior* of *os humerus* including the *sternum*. Belly circumference was measured by surrounding from the *posterior* of *os femur* including the *os ilium*. Thigh circumference was measured chicken's thigh including the *os femur*. The length of back was measured from *processus transverses* and *clavicula* to the *caudal vertebrae* prior to the *pygostyle*. The laser treatment and the measurement were repeated for seven days until four weeks.

The data was analyzed by using SPSS software version 23. The differences between the treatments are analyzed by GRA (Group Randomized Analysis) with Duncan Range Test.

Results and Discussion

The results of the parameters in the experimental groups are presented in Table I.

T0 significantly different from T1, T2

Table I. Mean body weight, circumference of breast, belly, thigh and length of back as influenced by laser treatment on in broilers.

Treatment	Body Weight cms	Breast Circumference cms	Belly Circumference cms	Thigh Circumference cms	Length of Back cms
T0 control	$259.00^{c} \pm 15.34$*	$5.61^{ab} \pm 0.57$	$5.67^{ab} \pm 0.29$	$2.10^{c} \pm 0.27$	$4.37^{a} \pm 0.44$
T1 0.2 J	$496.25^{a} \pm 17.86$	$6.50^{a} \pm 0.68$	$5.94^{a} \pm 0.78$	$2.97^{b} \pm 0.37$	$4.62^{a} \pm 0.42$
T2 0.04 J	$493.50^{a} \pm 25.65$	$5.58^{ab} \pm 1.06$	$6.16^{a} \pm 0.35$	$2.57^{bc} \pm 0.53$	$1.837^{c} \pm 0.76$
T3 0.5 J	$377.75^{b} \pm 37.56$	$4.88^{b} \pm 0.15$	$4.93^{b} \pm 0.38$	$4.94^{a} \pm 0.17$	$2.95^{b} \pm 0.25$

Figures bearing different superscripts differ significantly (P<0.05)

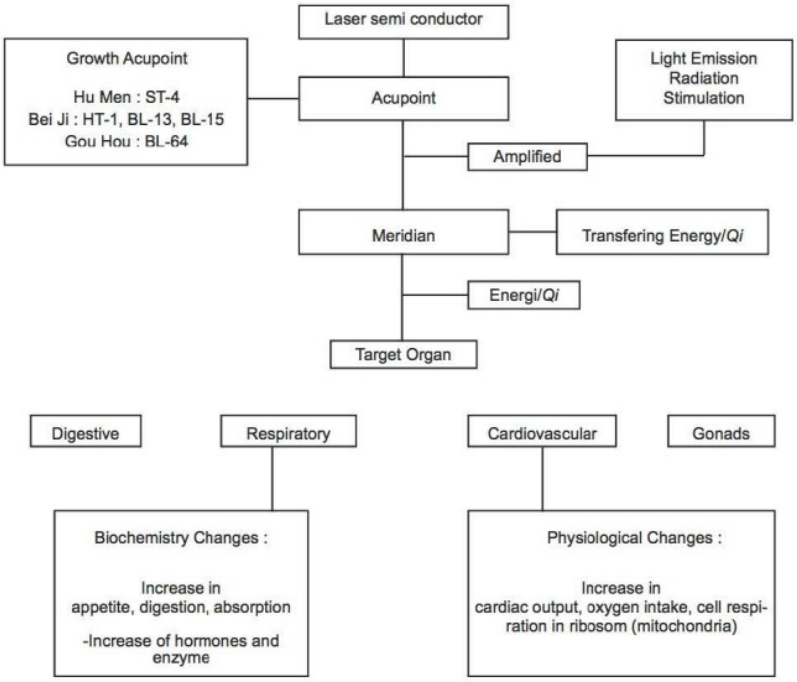

Fig 2. Laserpuncture Stimulation Mechanism.

and T3 ($p< 0.05$) in terms of body weights. T1 doesn't have significant differences against T2 ($p > 0.05$) however there is a significant differences between T1 and T2 and T3.

The breast circumference is significantly different between treatment groups T1, T2, and T3 ($p > 0.05$). All the treatment groups differed significantly from T0 (Control group)

The belly circumference is significantly differs between control and experimental groups, however the T1 and T2 did not differs significantly among them.

The back length of the broiler chicken differed significantly between treatment groups, which has shown a higher length in T1 only and the T2 and T3 these was decreased by treatment has compared to the control.

The combination from *Hu Men* acupoint and *Bei Ji* acupoint stimulation lead to the increase in the biometry in broiler chickens due to, better appetite and more active digestive system stimulation better absorbtion of feed nutrients compared to the control group 1 (Forwood, *et al*., 1992). The increase of blood circulation and oxygen intake was responsible

for better in muscle growth (Hurwitz, *et al.*, 1980).

Laserpuncture treatment 0.4 Joule dose had shown highest belly circumference followed by 0.2 Joule dose. The chicken's appetite and the digestive system activity are increased from the stimulation from *Hu Men* acupoint by laser puncture. Muscle growth is further influenced by type of exercise, nutritional intake, and hormonal status (Cogburn, *et al.*, 1989). By judicial allocation of the nutrients from food. These are hormones that modulate muscle growth: growth hormone, testosterone, IGF-1, cortisol, beta-endorphin, and thyroid hormone (McMurtry, *et al.*, 1988).

Gou Hou acupoint which is located on the *posterior* side of the limb (around *volar* from the *tarsi* and *metatarsi* joints) that could increase the hormones that modulate muscle growth that was affected by the laserpuncture stimulation through growth hormone (Yakimenko, *et al.*, 2002).

Laser that was used as acupuncture needle substitute was shot to growth acupoints on chickens were *hu men, bei ji, wei gen,* and *gou hou.* Acupoint commonly on the body surface having specific electric potential and the small electric stimuli can have the positive effect (Forwood, *et al., loc. cit*). Biophysics stimulation would produce energy that flowed through body's meridian system. Laserpuncture is similar to acupuncture by shooting the laser to acupoints in broiler chicken would affect the stimulation area and even the place that is far from the stimulation point through nerves (central nerves and peripheral nerves), neurohumoral, and meridian (Reece, *et al.*, 1982).

Based on the result of laserpuncture treatment 0.2 Joule dose that had the highest result in data body weight, breast circumference, and length of back. It proved the laserpuncture treatment 0.2 Joule dose was optimal dose to improve broiler chicken's genetic ability in body development especially the breast meat from *Bei Ji* acupoint stimulation that increase the cor and lung capacity for better blood circulation and oxygen intake that were affecting on the muscle growth in chicken.

Acupuncture excites receptors or nerve fibres in the stimulated tissue which are also physiologically activated by strong muscle contractions and the effects on certain organ functions are similar to those obtained by prot[illegible]ted exercise. Both exercise and acupuncture produce rhythmic discharges in nerve fibres, and cause the release of endogenous opioids and oxytocin essential to the induction of functional changes in different organ systems (Cogburn, *et al.*, 1989). Beta-endorphin levels, important in pain control as well as in the regulation of blood pressure and body temperature, have been observed to rise in the brain tissue of animals after both acupuncture and strong exercise (Adikara, *et al., loc. cit*).

Summary

Laserpuncture shooting in *Hu Men, Bei Ji, Wei Gen* and *Gou Hou* acupoints on broiler chicken had variety of results toward the chicken's biometry. The analysis result showed laserpuncture with 0.2 Joule dose had the highest result in body weight, breast circumference, and length of back. Laserpuncutre with 0.4 Joule dose had the highest result in belly circumference. Laserpuncture with 0.5 Joule dose had the highest result in thigh circumference.

References

Adikara YAR, Samik A, Yudaniayanti IS, Adikara TS, Hestianah EP, and Utama S. (2017) Effect of Laser Acupuncture Shoot on Ova Point of Male Mojosari Duck (Anas plathyrhynchos) on The Number of Sertoli and Leydig Cells. *KnE Life Sci.* **3**(6):650–7.

Cogburn LA, Liou SS, Rand AL, and McMurtry JP (1989) Growth, metabolic and endocrine responses of broiler cockerels given a daily subcutaneous injection of natural or biosynthetic chicken growth hormone. *J Nutr.* **119**(8):1213–22.

Deadman P, Al-Khafaji M, and Baker K. (1998) A manual of acupuncture. Journal of Chinese Medicine Publications East Sussex, UK.

Demir H, Menku P, Kirnap M, Calis M, and Ikizceli I. (2004) Comparison of the effects of laser, ultrasound, and combined laser+ ultrasound treatments in experimental tendon healing. *Lasers Surg Med Off J Am Soc Laser Med Surg.* **35**(1):84–9.

Forwood JR, and Davis L. (1992) Laser treatment of livestock feeds. Google Patents.

Galusky W. (2010) Playing chicken: Technologies of domestication, food, and self. *Sci Cult* (Lond). **19**(1):15–35.

Hurwitz S, Weiselberg M, Eisner U, Bartov I, Riesenfeld G,

and Sharvit M, (1980) The energy requirements and performance of growing chickens and turkeys as affected by environmental temperature. *Poult Sci*. **59**(10):2290–9.

an RJ, and Mirsalimi SM. (1992) Blood oxygen concentration of fast-growing and slow-growing broiler chickens, and chickens with ascites from right ventricular failure. *Avian Dis*. : 730–2.

Liu Y, Tan H an X, Zuo Z, and Liu K. (1998) Spinal segment distribution of neural innervation related to houhai acupoint and compared with zusanli and dazhui acupoints in domestic chicken. *Zhongguo Yi Xue Ke Xue Yuan Xue Bao*. **20**(2):154–60.

McMurtry JP, Plavnik I, Rosebrough RW, Steele NC, and udman JA. (1988) Effect of early feed restriction in male broiler chicks on plasma metabolic hormones during feed restriction and accelerated growth. *Comp Biochem Physiol Part A Physiol*. **91**(1):67–70.

Reece FN, and Lott BD. (1982) The effect of environmental temperature on sensible and latent heat production of broiler chickens. *Poult Sci*. **61**(8):1590–3.

Ross J. (1995) Acupuncture point combinations: The key to clinical success. Churchill Livingstone Edinburgh.

Sch r A, Offer T, and Baldissera I. (1998) Laser stimulation of acupuncture point P6 reduces postoperative vomiting in children undergoing strabismus surgery. *Br J Anaesth*. **81**(4):529–32.

Shang C. (1989) Singular point, organizing center and acupuncture point. *Am J Chin Med*. **17**(03n04):119–27.

Vinck EM, Cagnie BJ, Cornelissen MJ, Declercq HA, and mbier DC. (2003) Increased fibroblast proliferation induced by light emitting diode and low power laser irradiation. *Lasers Med Sci*. **18**(2):95–9.

kimenko I, Besulin V, and Testik A. (2002) The effects of low intensity red laser irradiation on hatching eggs in chicken and quail. *Int J Poult Sci*. **1**(1):6–8.

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Protective Effect of Mycotoxin Binders on Ovarian Gestation Mice Exposed by Zearalenone

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Abstract

Zearalenone (ZEN) is one of the most important mycotoxins for its global incidence and toxicity. Exposure ZEN to endocrine during gestation can cause abnormal development of the female reproductive system in animals. Mycotoxin binders are antagonistic to ZEN.

Key words: *Mycotoxin binders*, Zearalenone, Caspase 3, *Malondialdehyde* (MDA)

ZEN is particularly toxic to the reproductive system, resulting in uterine enlargement, alterations to the reproductive tract (Zhang *et al.*, 2014). ZEN has been associated with adverse effects on reproductive function in different species; However, side effects can be more pronounced during gestation (Massart *and* Saggese, 2014). Mycotoxin binders have a function to bind mycotoxins. Mycotoxin binders are also equipped with a decontaminant material useful in improving the animals' condition (Whitlow *and* Hagler, 2005).

Materials and Methods

The experiment animals were 20 healthy mice (*Mus musculus*) that had never been used as test animals prior to this research. Mycotoxin binders and ZEN are given orally. Negative control (C) was not exposed to ZEN and mycotoxin binders, positive control (C+) was exposed to 0.1 mg/BW/d ZEN. Treatments groups (MB1, 2, MB3) were exposed to 0.1mg/mouse/day ZEN and mycotoxin binders 0.5; 1; 2 mg/BW/day, with 10-days treatment time. After 10-day treatments, the female and male mice were coupled in a personal mating manner, and were observed for 5 days until copulations took place. On the sixth day after the personal mating, the

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