**SYNOPSIS**

**Upper case, non-bold, justified, font size 14, line spacing 1.0, space after paragraph 12 pt**

**Page size A4, left margin at 1.25", right, top and bottom margins at 1.0"**

**Upper case, bold, center, font size 14, line spacing 1.0, space after paragraph 12 pt**

SYNOPSIS OF THE PROPOSED RESEARCH WORK TO BE DONE IN CONNECTION WITH THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE / MASTER OF PHILOSOPHY / MASTER OF SCIENCE (IT) / MASTER OF ENGINEERING / DOCTOR OF PHILOSOPHY IN VETERINARY ANATOMY AND HISTOLOGY TO BE SUBMITTED TO THE SINDH AGRICULTURE UNIVERSITY, TANDOJAM BY MR. / MISS. GIVEN NAME, S/O / D/O GIVEN NAME WITH SURNAME, REG. NO. 2KXX-XX-XX / PH.D.-2KXX-XX-XX.

**Sentence case, bold, justified, font size 12, word ‘title’ followed by semicolon, indent at 0.5"**

**Title:** **Lysine and *Bacillus subtilis* E. supplementation ameliorate dexamethasone- stress induced changes in histomorphology of small intestine of broiler**

1. **Introduction**

 The demand for the inexpensive proteins is increasing dramatically particularly among developing countries as a result of population growth. Poultry uptake is forecasted se faster than beef worldwide in the coming decade (Abd-El-Samee et al*.,* 2013). Poultry industry is facing many challenges for the constant productivity. One of the biggest challenges is the stress. 40 different stressors have been recognized including transportation, fasting, the stocking density, beak trimming, handling, the high and low temperature, stunning and the infection (Li et al., 2009).

**Space before each paragraph 6 pt, indent at 0.5 "**

There is evidence that the stress has many negative effects on the intestinal morphology, intestinal microflora and the performance of birds. It reduces feed intake, the weight gain, feed efficiency, the villus length, villus height to crypt depth ratio, the goblet cells, carcass merits and the meat quality (Li et al., 2009; Zhang et al., 2017). When the birds face the stress, morphological and the physiological alterations occur through the trigger of hypothalamus pituitary-adrenal axis leading to the release of glucocorticoids from the adrenal gland and the rise of its level in the circulation.

**Sentence case, bold, font size 12, line spacing 1.0, space before and after paragraph 6 pt, no semi-colon after objectives**

**Objectives**

**Numbered in Roman numerals, indent at 0.5", Sentence case, font size 12, line spacing 1.0, space after paragraph 6 pt**

* 1. Effects of lysine and *Bacillus subtilis* supplementationagainst dexamethasone-stress induced changes in histomorphology of small intestine of broiler
	2. Effects of lysine and *Bacillus subtilis* supplementationagainst dexamethasone-stress induced changes in antioxidant enzymes of broiler

**Page numbers in bottom, centre, font size 12, non-bold**

**Page break**

**2. Review of literature**

**Section number then period sign followed by the number of sub-heading, font size 12, sentence case, space before and after paragraph 6 pt, indent at 0.5",**

**Numbered in English numerals, font size 12, sentence case, space before and after paragraph 6 pt**

**Each section on a new page**

**2.1 Dexamethasone-stress in poultry**

Dexamethasone is the most effective synthetic glucocorticoid which has virtually the pure glucocorticoid activity (Ong et al., 2009). The dietary Dexamethasone administration for more than the prescribed time period causes a stress-like inflammatory gastro intestinal response; elevated paracellular leakage across gut epithelium associated with the dissolution of tight junctions which contributes to the subclinical or clinical diseases. Glucocorticoids are also involved in muscle wasting caused by the trauma and inactivity in the humans (Ferrando et al., 1999).

**Sentence case, bold, font size 12, line spacing 1.0, indent at 0.5", space before and after paragraph 6 pt, numbered as section number, period sign, number of the sub-heading in Arabic numerals**

**2.2 Importance of lysine and *Bacillus subtilis* E. supplementation in broiler**

Lysine is an essential amino acid that must be provided through diet or supplementation (Budavari, 1989). It was first isolated from casein, a milk phospho-protein, in 1889 by the German dentist Heinrich Drechsel. Its main role is to participate in the protein synthesis (Tomé & Bos, 2007). Probiotic means “for life” according to the Greeks (Gibson & Fuller, 2000). They are the live microbial feed additives which beneficially affect the host animal by improving its intestinal balance of microflora (AFRC, 1989). They decrease the proliferation of undesirable and pathogenic microflora in the GIT (Fuller, 1977; Watkins et al., 1982). Due to the flourishing awareness upon drug residues in the animals and the animal products with resistance that has built against antibiotics, the probiotic use has gained great emphasis (Chiang et al., 1995).Yeo et al*.* (1997) concluded that *B. subtilis* may improve animal health and the growth especially during early life.

**For in-text citations, the APA style shall be followed with slight modifications, i.e., a study published by one or two authors shall carry last name(s) of the author(s) separated by ‘and / & (in parenthetical citation)’ as the case may be. However, in case there are more than two authors, only last name of the first author shall be written followed by ‘et al’. In et al., et should not be followed by a period (.) sign. No page numbers or issue/volume numbers shall be added to in-text citation.**

**Page break**

**3. Plan of work**

**Table captions before table, font size 12, bold, justified, line spacing 1, space before and after paragraph 6 pt, indent 1.0’’ after table number**

 This study will include day old healthy birds. The total duration of experiment will be 42 days.

**3.1 Experimental birds**

 In this experiment 336 birds will be used. The shed will be cleaned and fumigated before arrival of chicks. After initial weight, chicks will be brooded together on deep litter system for one week in order to acclimatize. At the age of 21 days, the chicks will be randomly divided into seven groups as shown in Table 1.

**Table 1 Experimental design**

**Table placed in the center of page or set as ‘AutoFit To Window’, text aligned in center of cell, column headings bold, font size 12, line spacing 1, row headings and table text non-bold**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  **G1** |  **G2** |  **G3** |  **G4** |  **G5** |  **G6** |  **G7** |
| Positive control | Negative control | Probiotic | Lysine | Probiotic + Lysine | Lysine | Probiotic + Lysine |
| Only BD | BD+DS | 100 g / ton+DS | 7g / Kg + DS | 100g / ton probio+7g/Kg Lys+DS | 11g/kg+DS | 100g/ton probio+11g/Kg Lys+DS |

BD= basal diet, DS= dexamethasone stress, Probio= probiotic, Lys= lysine

**3.2 Vaccination schedule**

The vaccination schedule will be followed at prescribed time as shown in Table 2.

**3.4 Statistical design**

 Data will be presented as Mean ± Standard Error of Mean and will be statistically analyzed using SSPSS (Version 20.0). The group means will be analyzed using Two-way Analysis of Variance (ANOVA). The group differences will be compared by Duncan Multiple Range Test.Differences will be considered significant at P < 0.05.

**Table 2 Vaccination schedule**

|  |  |  |
| --- | --- | --- |
| . **Days** | **Vaccines** | **Route of Administration** |
| 1 – 3 | N.D + I.B | Eye Drops |
| 10 – 12 | I.B.D | Distal Water |
| 16 – 17 | H.P.S | Sub cut. ½ cc |
| 22 | I.B.D | Orally |
| 28 | N.D | Orally |

**Page break**

**References**

**Font 12, line spacing 1.0, indent in subsequent lines at 0.5", space after paragraph 6 pt**

Abd-El-Samee, D., El-Wardany, I., Nematallah, G., & Abo-El-Azab, O. (2013). Effect of Dietary Organic Zinc and Prebiotic on Productive Performance and Immune Response of Growing Quails. *Iranian Journal of Applied Animal Science*, *3*(4), 761-767.

Budavari, S. (1989). *The Merck index: An encyclopedia of chemicals, drugs, and biologicals*. Rahway, New Jersy, U.S.A: Merck.

Chiang, S. H., & Hsieh, W. M. (1995). Effect of direct-fed microorganisms on broiler growth performance and litter ammonia level. *Asian-Australasian Journal of Animal Sciences*, *8*(2), 159-162.

Tomé, D., & Bos, C. (2007). Lysine requirement through the human life cycle. *The Journal of nutrition*, *137*(6), 1642S-1645S.

Ferrando, A. A., Stuart, C. A., Sheffield-Moore, M., & Wolfe, R. R. (1999). Inactivity amplifies the catabolic response of skeletal muscle to cortisol. *The Journal Of Clinical Endocrinology & Metabolism*, *84*(10), 3515-3521.

Fuller, R. (1977). The importance of lactobacilli in maintaining normal microbial balance in the crop. *British Poultry Science*, *18*(1), 85-94.

AFRC, R. F. (1989). Probiotics in man and animals. *Journal Of Applied Bacteriology*, *66*(5), 365-378.

Gibson, G. R., & Fuller, R. (2000). Aspects of in vitro and in vivo research approaches directed toward identifying probiotics and prebiotics for human use. *The Journal of nutrition*, *130*(2), 391S-395S.

Li, Y., Cai, H. Y., Liu, G. H., Dong, X. L., Chang, W. H., Zhang, S., ... & Chen, G. L. (2009). Effects of stress simulated by dexamethasone on jejunal glucose transport in broilers. *Poultry science*, *88*(2), 330-337.

Ong, S. L., Zhang, Y., & Whitworth, J. A. (2009). Mechanisms of dexamethasone-induced hypertension. *Current Hypertension Reviews*, *5*(1), 61-74.

Watkins, B. A., Miller, B. F., & Neil, D. H. (1982). In vivo inhibitory effects of Lactobacillus acidophilus against pathogenic Escherichia coli in gnotobiotic chicks. *Poultry Science*, *61*(7), 1298-1308

Yeo, J., & Kim, K. I. (1997). Effect of feeding diets containing an antibiotic, a probiotic, or yucca extract on growth and intestinal urease activity in broiler chicks. *Poultry Science*, *76*(2), 381-385.

Zhang, C., Zhao, X. H., Yang, L., Chen, X. Y., Jiang, R. S., Jin, S. H., & Geng, Z. Y. (2017). Resveratrol alleviates heat stress-induced impairment of intestinal morphology, microflora, and barrier integrity in broilers. *Poultry science*, *96*(12), 4325-4332.