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SYNOPSIS

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.

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Title: Lysine and *Bacillus subtilis* 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 to be 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).

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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.

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Objectives

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- i. Effects of lysine and *Bacillus subtilis* supplementation against dexamethasone-stress induced changes in histomorphology of small intestine of broiler
- ii. Effects of lysine and *Bacillus subtilis* supplementation against dexamethasone-stress induced changes in antioxidant enzymes of broiler

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2. Review of literature

2.1 Dexamethasone-stress in poultry

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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).

2.2 Importance of lysine and *Bacillus subtilis* 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.

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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.

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3. Plan of work

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

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 \pm 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

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

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