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EFFECT OF PROBIOTIC AND LACTOFERRIN -SUPPLEMENTED DIETS ON
DAILY GAIN, FEED INTAKE, FEED CONVERSION RATE, MEAN WEEKLY
FAECAL SCORES, LYMPHOCYTE TO NEUTROPHIL RATIO, IMMUNITY,
GENERAL HEALTH, AND HEMATOLOGICAL PARAMETERS IN WEANLING
PIGS SUBJECTED TO AN IMMUNOLOGICAL CHALLENGE

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RICHARD NKAMBA

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ABSTRACT

Background The digestive system of early weaned pigs is not fully developed and animals can be subjected to a post-weaning check, or lag period, which results in poor feed intake, weight gain, immunity and high diarrhoea cases and mortality. In addition, there is a depression of growth during an immune challenge that results in nutrient intake restriction and redirection to support the immune system. A shift from the unstable flora at weaning into a complex stable one would be achieved by diet manipulation. Different natural products (instead of hazardous antibiotics) are being tested to find their ability in improving pig health and performance.

The aim of this study was therefore to evaluate the effects of dietary supplementation with probiotics and lactoferrin on pigs' growth performance, haematological characteristics and general health. The weaned pigs from four different farms were mixed together upon arrival to place them in an immune challenging environment.

Results After 21 days post challenge/weaning, average daily feed intake, ADFI (404.64, 426.77, 423.63, 378.48 and 341.48 g/p/d for diet for diet A[control], B, C, D (probiotics) and E [lactoferrin], respectively) was significantly different in pigs that consumed the five diets ($p=0.0259$). Pigs that consumed diet B had 5.47% higher feed intake ($p<0.05$) than the controls, while those that received diet C consumed 4.69% more feed than the controls but this feed intake was not significantly different from that of the controls ($p>0.05$). The difference in feed intake between pigs in fed diet B and C was also not significant ($p>0.05$). Animals that were allocated to diet D and diet E (lactoferrin) consumed significantly less feed compared to the controls ($p<0.05$). Feed consumption was 6.47% and 15.61% lower ($p<0.05$) for pigs fed diet D and E, respectively, compared to the controls. Pigs that received diet D consumed significantly higher amounts of feed ($p<0.05$) than those fed diet E (lactoferrin).

In conclusion, in the first three weeks of life, or at times of stress such as weaning and / or immune challenge, a good probiotic (such as B or C) should produce a faster and more rapid response by increasing / stimulating feed intake so that body weight losses are quickly compensated. Feed intake is a factor that limit growth in weaned piglets. Weight is gained after the improvement in feed ingestion. Reduction in feed / energy

intake also reduces body weight. If feed (energy) intake is reduced, then, a good diet should stimulate quick repair of the gut and improve intestinal environment architecture and integrity. When feed consumption increases, the levels of digestive enzymes responsible for the breakdown of fats, starches and proteins increase. When feed intake is not increased or increased too late after weaning, bodyweight may not be compensated.

DEDICATION

I dedicate this thesis to my wife Oli, my sons: Sampa, Bwalya and Mambwe and daughter, Chimwemwe. This is one of the highest achievements for the benefit for all of us. MAY HIS NAME BE BLESSED AND GLORIFIED.

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TABLE OF CONTENTS

Abstract	i
Dedication	iii
Acknowledgement	iv
Table of Contents	v
List of Tables	ix
List of Figures	x
List of Abbreviations	xi
List of Appendices	xii
Introduction	xiii
CHAPTER 1. LITERATURE REVIEW	1
1.1 Probiotics	1
1.1.1 History of Claims	1
1.1.2 Definition of Probiotics	1
1.1.3 Revision of Definition	2
1.1.4 Characteristics of effective Probiotics	2
1.1.5 Development and production of probiotics	3
1.1.6 Antibiotics and their use	4
1.1.7 Benefits of antibiotics	4
1.1.8 Disadvantages and reason for their ban	6
1.1.9 Pig growth and appropriate times to use antibiotics or probiotics	7
1.1.9.1 The pig growth in general	7
1.1.9.2 The piglet after weaning	7
1.1.9.3 The pig at Weaning	9
1.1.10 Effect of antibiotic ban	11
1.1.11 Alternatives to antibiotics	12
1.1.12 Way Forward	12
1.1.13 Methods to improve performance after the ban	14
1.1.14 Other claims and example of probiotics	15
1.1.15 Some requirements for development of probiotics	17
1.1.16 Costs and effectiveness of probiotics	18
1.1.17 Interactions between probiotics, ingredients and time	18
1.2 The Immune System	19
1.3 Effect of natural products	19
1.3.1 Effect and mode of action of nonstarch polysaccharide	19
1.3.2 Effect of probiotics on blood parameters	20
1.3.3 Effect and mode of action of lactoferrin on performance and general health	21
1.3.4 Common methods of preparation / production of lactoferrin	23
1.3.5 The normal or reference values of the leukogram	23

1.3.6	Interpreting the results..	26
1.3.6.1	Evaluation of leukocytes	26
1.3.6.2	Differential leukocytes count	27
CHAPTER 2	EFFECT OF PROBIOTIC ON AVERAGE DAILY GAIN, FEED INTAKE, FEED CONVERSION RATION, HAEMTOLOGICAL PARAMETERS, IMMUNITY AND GENERAL HEALTHON IMMUNE CHALLENGED WEANLING PIGS...	28
2.1	Introduction	28
2.2	Materials and Methods	29
2.2.1	Experimental animals	28
2.2.2	Weaner pens	29
2.3	Experimental Diets and Feed management...	30
2.3.1	Experimental Diets	30
2.3.2	Feed Management	31
2.4	Source and Maintenance of Cultures	32
2.5	Colony Forming units, Cfu	32
2.6	Faecal Scoring	32
2.7	Blood Sampling	33
2.8	Haematological / Immune Status	33
2.9	Statistical Analyses	34
CHAPTER 3	RESULTS	36
3.1	Effects of mixing pigs from different farms	39
3.2	Effects of probiotic- and lactoferrin supplemented diets on animal performance	39
3.2.1	Week 0 Body Weight (weaning weight)	39
3.2.2	Week 1 Body Weight	40
3.2.3	Week 2 Body Weight	41
3.2.4	Week 3 Body Weight	41
3.2.5	Average Daily Gain	41
3.2.6	Average Daily Feed Intake	42
3.2.7	Average Feed Conversion Rate	43
3.3	Effects of probiotic- and lactoferrin-supplemented diets on blood parameters	44
3.3.1	Whole blood parameters	44
3.3.1.1	White blood cells population	45
3.3.1.1.1	Absolute White blood cell	45

3.3.1.1.2 Neutrophils	49
3.3.1.1.3 Lymphocytes	50
3.3.1.1.4 Monocytes	50
3.3.1.1.5 Eosinophils	51
3.3.1.1.6 Basophils	52
3.3.1.2 Erythrocytes or red blood cell population and red cell indices	53
3.3.1.2.1 Erythrocytes or red blood cells	54
3.3.1.2.2 Haemoglobin	55
3.3.1.2.3 Haematocrit	55
3.3.1.2.4 Mean Corpuscular volume	56
3.3.1.2.5 Mean Corpuscular Haemoglobin	57
3.3.1.2.6 Mean Corpuscular Haemoglobin Concentration	57
3.3.1.2.7 Corpuscular Haemoglobin Concentration Mean	58
3.3.1.2.8 Red cell Distribution Width	58
3.3.2 Blood Cell Parameter Changes	59
3.3.2.1 Absolute White blood cells population changes	59
3.3.2.1.1 Leukocytes or White blood cells	59
3.3.2.1.2 Neutrophils	59
3.3.2.1.3 Lymphocytes	60
3.3.2.1.4 Monocytes	62
3.3.2.1.5 Eosinophils	63
3.3.2.1.6 Basophils	63
3.3.2.2 Red blood cell population changes	63
3.3.2.2.1 Red blood cells	63
3.3.2.2.2 Haemoglobin	64
3.3.2.2.3 Haematocrit	65
3.3.2.2.4 Mean Corpuscular volume	66
3.3.2.2.5 Mean Corpuscular Haemoglobin	65
3.3.2.2.6 Mean Corpuscular Haemoglobin Concentration	67
3.3.2.2.7 Corpuscular Haemoglobin Concentration Mean	68
3.3.2.2.8 Red cell Distribution Width	69
3.4 Effects of Probiotic- and lactoferrin-supplemented diets on Mean Weekly Fecal Scores of pigs	70
3.5 Effects of Probiotic- and lactoferrin supplemented diets on lymphocyte to neutrophil ratio (stress factor) of pigs	73
3.6 Effects of Probiotic- and lactoferrin supplemented diets on health parameters of pigs	74

CHAPTER 4

DISCUSSION	75
Effects of mixing pigs from different farms to stimulate the immune challenge...	75
Effects of probiotic- and lactoferrin-supplemented diets on performance and immunity of pigs...	75

CHAPTER 5	
CONCLUSION	87
CHAPTER 6	
LIST OF REFERENCES	92
CHAPTER 7	
LIST OF APPENDICES	123

LIST OF TABLES

Table	page
Table 1: Components of the gut mucosal barrier in the piglet	9
Table 2: Blood parameters, their abbreviations and units of Measurement.....	24
Table 3: Accepted physiological values of white and red blood cell parameters in normal and anaemic pigs	25
Table 4: Ingredients and diet formulation of experimental diets used in the study to find the effect of different probiotics and lactoferrin on performance of weaned piglets....	31
Table 5: Least-square means of the effects of probiotic- and lactoferrin-supplemented diets on growth performance in weanling pig for average pen liveweight of piglets at the start of the experiment (Wk0wt), average pen live weight of piglets at the end of week 1 (wk1wt), average pen live weight of piglets at the end of week 2 (wk2wt), average pen live weight of piglets at the end of week 3 (wk3wt), average daily gain (ADG), average daily feed intake (ADFI) and average feed conversion rate (FCR) for the 21 day experimental period for each diet with standard error (SE)	40
Table 6: Effects of probiotic- and lactoferrin-supplemented diets on blood parameters	46
Table 7: Least square means for effects of probiotic- and lactoferrin-supplemented diets on lymphocyte to neutrophil ratio in weanling pigs... ..	71
Table 8: Least square means for effects of probiotic- and lactoferrin-supplemented diets on mean weekly faecal score in weanling pigs .	73

LIST OF FIGURES

	Page
Figure 1: Effect of non-starch polysaccharide on performance of animals... ..	19

LIST OF ABBREVIATIONS

BASO	Basophil cells
CH	Corpuscular haemoglobin constant
CHCM	Corpuscular haemoglobin concentration mean
CH	Corpuscular haemoglobin
CHOL	Cholesterol
Cu	Copper
DNA	Deoxyribose nucleic acid
EOSI	Eosinophil cells
ESR	Erythrocyte sedimentation rate
HCT	Haematocrit level
HGB	Haemoglobin concentration
LYMPH	Lymphocyte cells
(L/N ratio)	Lymphocyte to neutrophil ratio
MCH	Mean cell haemoglobin (or mean erythrocyte haemoglobin content)
MCHC	Mean corpuscular haemoglobin concentration (or mean erythrocyte haemoglobin concentration)
MCV	Mean cell volume (or mean erythrocyte volume)
M	Molar
MONO	Monocyte cells
NEUT	Neutrophil cells
ppb	Parts per billion
RBC	Red blood cells
RDW	Red blood cell distribution width (or erythrocyte distribution width)
SAS	Statistical Analysis System
TG	Triglyceride
USDA	United States Department of Agriculture
WBC	White cells

LIST OF APPENDICES

Annex 1: The statistical significance of effects of farm, diet, and their interactions on different parameters in weaned pigs	123
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