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Effect of some feed additives on productive and physiological performance in rabbits

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CONTENTS

Subject	Page
1- INTRODUCTION.....	1
2- REVIEW OF LITERATURE.....	4
2-1- Definition of Feed Additives and Types	4
2-2- Alternative Feed Additives to Antibiotics	8
2-2-1- Enzymes	9
2-2-2- Acidifiers	10
2-2-3- Antioxidants	11
2-2-4- Probiotic	12
2-2-5- Prebiotics	13
2-2-6- Symbiotic	15
2-2-7- Phytogetic Additives (Photobiotic).....	15
2-2-7-1- Cinnamon.....	17
2-2-7-2- Thyme.....	18
2-2-7-3- Capsaicin.....	19
2-3- Phytogetic Feed additive and Animal Health	21
2-3-1-Impact on animal performance.....	21
2-3-2-Impact on meat quality.....	24
2-3-3-Impact on gastrointestinal and digestibility.....	26
2-3-4-Impact on animal immunity.....	28
2-3-5-Antimicrobial activity.....	30
2-3-6-Other health benefits of phytogetic feed additive.....	32
3- MATERIALS AND METHODS.....	37
3-1- Experimental Design	37
3-2- Basal Diet Composition	37
3-2-1-Animals and housing	38
3-3-Measurements.....	39
3-3-1-Body weight and weight gain.....	39
3-3-2-Feed consumption	39
3-3-3-Feed conversion ratio	39
3-3-4- Performance Index.....	39
3-3-5-Mortality rate (%).....	40
3-3-6-Carcass and characteristics	40
3-3-7-Biochemical analysis of blood plasma	41
3-3-7-1-Liver function determinations.....	41

3-3-7-1-1- plasma total protein	41
3-3-7-1-2- plasma albumin.....	42
3-3-7-1-3- plasma globulin.....	43
3-3-7-1-4- plasma glucose.....	43
3-4-7-5- Liver function determinations.....	44
3-4-7-5-1-Aspartate aminotransferase (AST) or plasma glutamic oxalo acetic transaminase (GOT).	44
3-4-7-5-2-Alanine aminotransferase (ALT) or plasma glutamic-pyruvic transaminase (GPT).....	45
3-4-7-6-plasma triglycerides	45
3-4-7-7-plasma cholesterol.....	46
3-4-7-7-1-High density lipoprotein (HDL cholesterol) determination.....	47
3-4-7-7-2-Low density lipoprotein (LDL cholesterol) determination.....	47
3-4-7-8-kidney function determinations.....	47
3-4-7-8-1-Plasma creatinine.....	47
3-4-7-8-2-Plasma uric acid	48
3-4-7-9-Blood oxidative capacity	49
3-4-7-9-1-Total antioxidant capacity (TAC).....	49
3-4-7-9-2-Superoxide dismutase (SOD).....	49
3-4-7-9-3-Malondialdehyed (MDA).....	49
3-4-8- Economic efficiency.....	50
3-4-9- Statistical analysis.....	50
4-RESULTS AND DISCUSSION.....	51
4-1-Effect of Experimental Diets on Growth Performance Parameters.....	51
4-1-1-Effect of experimental diets on the body weight.....	51
4-1-2-Effect of experimental diets on the daily weight gain.....	52
4-1-3-Effect of experimental diets on the feed intake and feed conversion ratio....	53
4-1-4-Effect of experimental diets on the relative growth rate and performance index....	54
4-1-5-Effect of experimental diets on the mortality rate (%).....	55
4-2-Effect of Experimental Diets on Carcass Traits of Growing NZW Rabbit....	57
4-2-1-Effect on carcass and total giblets weight percentage	57
4-2-2- Effect of experimental diets on fat weight.....	58

Contents

4-2-2-1-Abdominal fat weight.....	58
4-2-2-2-Kidney fat Weight.....	58
4-2-3-Effect of experimental diets on dressing (%).....	58
4-2-4- Effect of experimental diets on gastrointestinal tract (GIT).....	59
4-3-Effect of experimental diets on cecum traits.....	59
4-3-1-Length and weight of cecum.....	59
4-3-2-Effect of experimental diets on pH of stomach.....	60
4-3-2-1-PH stomach.....	60
4-3-2-2- Effect of experimental diets on the pH(small intestine and large intestine)...	60
4-3-2-2-1-PH of small intestine.....	60
4-3-2-2-2-PH of Large intestine.....	60
4-3-2-3-Effect of experimental diets on the PH of cecum.....	60
4-4-Effect of Experimental Diets on Physiological Responses.....	62
4-4-1-Effect of experimental diets on the total protein and globulin.....	62
4-4-1-1-Total Protein.....	62
4-4-1-2-Effect of experimental diets on the globulin(G) and albumin(A).	63
4-4-1-3-Effect of experimental diets on plasma glucose.....	64
4-4-2- Effect of experimental diets on plasma lipid function.....	64
4-4-2-1- Effect of experimental diets on plasma the total lipids.....	64
4-4-2-2- Effect of experimental diets on plasma total cholesterol... 65	
4-4-2-3- Effect of experimental diets on plasma triglyceride.....	65
4-4-2-4- Effect on high density lipoprotein (HDL) and low density lipoprotein(LDL).	66
4-4-3- Effect of experimental diets on kidney function.....	67
4-4-3-1- Effect of experimental diets on plasma creatinine.....	67
4-4-3-2- Effect of experimental diets on plasma urea-n.....	67
4-4-4- Effect of Experimental Diets on Liver Function.....	68
4-4-4-1- Effect of experimental diets on the (AST).....	68
4-4-4-2- Effect of experimental diets on the (ALT).....	68
4-4-5-Effect of Experimental Diets on Immunological Parameters (blood oxidative capacity)..	69
4-4-5-1- Effect of experimental diets on the total antioxidant capacity (TAC)..	69

Contents

4-4-5-2-Effect of experimental diets on superoxide dismutase (SOD)..	70
4-4-5-3- Effect of experimental diets on malondialdehyed (MDA)...	70
4-4-6- Effect of Experimental Diets on Economic Efficiency.....	72
SUMMARY AND CONCLUSION.....	73
REFERANCES.....	77
ARABIC SUMMARY AND CONCLUSION.....	\

List of tables

No.	Title	page
1	The response of phytogetic additives by non- ruminant animals.....	34
2	The composition and chemical analysis of basal diets.....	38
3	Effect of experimental diets on body weight of NZW rabbits from 5 to 13 weeks of age.....	51
4	The effect of experimental diets on growth performance of NEZ rabbits from 5 to 13 weeks of age.....	52
5	Effect of experimental diets on carcass traits (%) of growing NZW rabbits.....	57
6	Effect of experimental diets on cecum and stomach traits of growing rabbits.....	59
7	Effect of experimental diets on Plasma blood constituents of growing NZW rabbits.....	63
8	The effect of experimental diets on Plasma lipid function of growing NZW Rabbits.....	64
9	Effect of experimental diets on Kidney function of growing NZW rabbits.....	67
10	The effect of experimental diets on Liver function of growing NZW rabbits.....	68
11	Effect of experimental diets on blood oxidative capacity of growing NZW rabbits.....	69
12	Effect of some feed additives on net revenue of growing NEZ rabbits.....	72

List of Abbreviation

ABBREVIATION	MEANS
AGP	Antibiotic Growth Promoters
EO	Essential Oil
NZW.....	New Zealand White
PFA	Phytogenic Feed Additives
PUFA	Polyunsaturated Fatty Acids
NFkB	Nuclear factor “kappa light-chain-enhancer” of activated B cells
NRC	Nutrient Requirement counsel
C.....	Control group(without supplementation)
T1.....	(Thyme 150 g/ton diet)
T2.....	(Capsaicin 150 g/ton diet)
T3.....	(Cinnamon 150 g/ton diet)
T4.....	150 g/ton diet mixture of (50 g Thyme, 50 g Cinnamon and 50g Capsaicin)
T5.....	100 g/ton diet extract commercial mixture of (Thyme, Cinnamon and Capsaicin)
BW	Body weight
WG	weight gain
Ppm.....	Part per million
FI	Feed Intake
FCR.....	Feed Conversion rate (ratio)
LDL	low density lipoprotein
HDL	high density lipoprotein
SGPT.....	Serum glutamic-pyruvic transaminase
AAS	atomic absorption spectrophotometer
SGOT.....	serum glutamic-oxalo acetic transaminase
ALT.....	Alanine Amino Transferase
AST.....	Aspartate Amino Transferase
SGPT.....	Serum glutamic-pyruvic transaminase
GIT	Gastrointestinal tract
ALP	Alkaline phosphatase
TAC.....	Total antioxidant capacity
SOD.....	Superoxide dismutase
MDA.....	Malondialdehyd

SUMMARY AND CONCLUSION

This study was carried out at the rabbits Farm of Sakha Station, Animal Production Research Institute, Agriculture Research Center, Egypt, during the period from December 2017 until Fibril 2018.

The experimental design:-

Seventy two rabbits NZW of five weeks old divided into six groups of 12 rabbit each. So, six treatments were as follow:

1. Rabbits fed a pelleted basal diet with standard components control group (C).
2. Rabbits fed a pelleted basal diet with 150 gram Thyme /ton diet (T1).
3. Rabbits fed a pelleted basal diet with 150 gram Capsaicin /ton diet (T2).
4. Rabbits fed a Rabbits fed a pelleted basal diet with 150 gram Cinnamon / ton diet (T3).
5. Rabbits fed a pelleted basal diet with 150g (50g Thyme + 50g Capsaicin + 50g Cinnamon) /ton diet (T4).
6. Rabbits fed a pelleted basal diet with 100g *Extract 6930* [extracted commercial powder (Thyme + Capsaicin + Cinnamon)] /ton diet (T5).

Animals and housing:

Seventy two New Zealand White (NZW) rabbits of 5 week of age with initial weights of 700g were used for the study. The rabbits were randomly allocated to six treatments groups of 12 rabbits each. Each treatment was sub-divided into 4 replicates of 3 rabbits. Rabbits were similar, with respect to body weight and sex.

All rabbits were kept under the same managerial conditions. Feed and water were offered ad libitum. Individual live body weight and feed intake were recoded, while average gain and feed conversion ratio were calculated weekly from 5 to 13 weeks of age. Mortality and the clinical health status of all rabbits were monitored daily and mortality percentage was calculated.

At the end of growing period, three rabbits of 13 weeks of age were taken randomly from each treatment, fasted for 12 hrs. Weighed, slaughtered and weighed after complete bleeding, skinned and eviscerated. Before slaughtering, 6 ml of blood sample was taken from the ear vein with a sterile syringe.

Summary and Conclusion

The results indicated that:

- 1- The highest significant body weight from 5 to 13 weeks of age were recorded for rabbits fed basal diet supplemented with 150 g/ton diet consist of mixture (50 g Thyme + 50 g Cinnamon+ 50 g Capsaicin) high significant ($P \leq 0.01$) compared the other groups and the lowest body weights the control group.
- 2- Addition of 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) significantly ($P \leq 0.01$) increased body weight gain (BWG) compared to the other groups and the lowest of the body weight gain was recorded for rabbits fed diet without any supplementation control.
- 3- The highest significant a feed intake g/d (FI) from 5 to 13 weeks of age was recorded for rabbits fed basal diet without any supplementation (control group) comparing with the other experimental treatments.
- 4- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) caused improvement in the growth performance and FCR compared with the other treatments and control group.
- 5- The control group was recorded mortality rate 16.7 % and decreased in treatment 150g/ton diet Cinnamon 8.3%.but no mortality could be observed during the experimental period in the other treatments
- 6- The highest significant ($P \leq 0.01$) carcass (%) BW were recorded for rabbits fed basal diet supplemented with 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) comparing with the other experimental treatments and the control group.
- 7- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) caused abdominal fat significantly ($P \leq 0.01$) decreased comparing with the other experimental treatments and the control group.
- 8- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) T4 caused kidney fat weight significantly ($P \leq 0.01$) decreased comparing with the control group.
- 9- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) caused improvement in the dressing % compared with the other treatments and control group, was recorded the rabbits Dressing % in the 84.9 % as the number.

Summary and Conclusion

- 10- Gastrointestinal Tract (GIT) and (BW) were increased significantly ($P \leq 0.01$) in the rabbits fed basal diet without any supplementation (control) compared with other treatments.
- 11- Addition 150 g/ton diet mixture (50 g Thyme + 50 g Cinnamon+ 50 g Capsaicin) caused improvement and was increased significantly ($P \leq 0.01$) in Cecum traits compared with other treatments and control group.
- 12- Addition a pelleted basal diet with 100g [extracted commercial mixture (Thyme+ Cinnamon+ Capsaicin)] due to high significantly ($P \leq 0.01$) in the PH Stomach compared with other treatments and control group.
- 13- Addition a pelleted basal diet with 100g and addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) due to high significantly ($P \leq 0.01$) in the PH Cecum compared with other treatments and control group.
- 14- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) significantly ($P \leq 0.01$) increased in the Total protein compared with other treatments and control group.
- 15- Addition 150 g/ton diet mixture (50 g Thyme + 50 g Cinnamon+ 50 g Capsaicin) due to high significantly ($P \leq 0.01$) increased in plasma Glucose, compared with other treatments and control group.
- 16- Addition 150 g/ton diet mixture (50 g Thyme + 50 g Cinnamon + 50 g Capsaicin) caused total lipids significantly ($P \leq 0.01$) decreased comparing with other experimental treatments and the control group.
- 17- Addition 150 g/ton diet mixture (50 g Thyme + 50 g Cinnamon + 50 g Capsaicin) caused total cholesterol significantly ($P \leq 0.01$) decreased was recorded the total cholesterol comparing with other experimental treatments and the control group.
- 18- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) due to high significantly ($P \leq 0.01$) increased in the density lipoprotein (HDL) and addition 100g [extracted commercial (Thyme+ Capsaicin+ Cinnamon)] /ton diet due to high significantly($P \leq 0.01$) increased in the density lipoprotein (HDL) compared to control group and other treatments.

Summary and Conclusion

- 19- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) due to high significantly ($P \leq 0.01$) increased in the Total antioxidant capacity (TAC) compared with control group and other treatments.
- 20- Addition 150 g/ton diet mixture (50 g Thyme+ 50 g Cinnamon+ 50 g Capsaicin) due to high significantly ($P \leq 0.01$) increased in the Superoxide dismutase (SOD) compared with control group and other treatments.
- 21- The best economical efficacy was obtained 1.70 in rabbit's fed 150 g/ton diet mixture (50 g Thyme + 50 g Cinnamon + 50 g Capsaicin) and also, in rabbits fed 150 g/ton diet Thyme, while the lowest one was obtained for rabbits in the control group (0.67).

Conclusion

It could be recommended that, using of addition of medicinal plants (Thyme, Cinnamon and Capsicum) as mixture 150 g/ton diet (50 g Thymol +50 g Cinnamon+50 g Capsaicin), improved growth performance, physiological response, and economic efficiency and can be used as antimicrobials in rabbit's diet.