



NATURAL FEED ADDITIVE BLENDS

-Considerable lower Production costs

-More Sustainability

Effect of incorporation 'APC Natural feed additive blends, in alimentation of broilers, layers and breeders

INTRODUCTION

The alimentary security and the quality are become very essential for nations. So, not only many industrial practices have been ameliorated but also the rentability of breeding is increasing. This way is very important to avoid anti bio resistance caused by antibiotics, Growth Factor, which is forbidden in many countries of European community since 1/01/2006 and also others countries very soon.

In this case, it is necessary to look for another alternative like additives which have the similar zoo technical effects than antibiotics. On the first hand, the Factor Growth makes regularity to intestine flora. So, it ameliorates the digestion and decreases diseases. On the other hand, it avoids the decreasing of productivity due to stress, absence of hygiene or bad quality of feeds. The genetic of animal is better valorised, adding that the weight and the conversion rate. If antibiotics would be forbidden, it is evidence to find other solutions which are in the same time efficient and guaranties in the alimentary security and also the environment.

Many molecular have been identified such as clay, enzymes and essential oils. Probiotics and acidifiants can also substitute the Growth Factor but these additives don't give the same advantages especially economic advantages. For this reason, many factories are searching now a combination of product able to procure the essential benefice as they use antibiotics.

In This case, the APC, natural additives blends, made by Agrar Production und consulting is one of these products introduced in Tunisia. For convincing customs about benefits of this product, Agrar Production und consulting has started with a public organism (CFPAA) of SIDI THABET. For scientific studies reason, the CFPAA has made in broiler houses trials to study the effect of APC, natural feed additive blends, in broiler, layers and breeders feeds. These trials have been presented in veterinary thesis.



Effect of incorporation 'APC natural feed additive blends' for zoo technical and sanitary Performance of broilers

Dridi. Amor¹, El Gharbi.Mustapha², Assali. Nestrine³.

1Service of poultry farming and poultry pathology, National veterinary school of Sidi Thabet – Tunisia

2 Professional centre of poultry formation, 2020- Sidi Thabet, Assistant in veterinary medicine

3 Service of poultry farming and poultry pathology, national veterinary school, 2020- Sidi thabet – Tunisia.

Summary

The trial contains four flocks with JVA breeder during 47 days. The ordinary flock receives the ordinary feed. The others flocks receive a ration contained APC (0.2%) from the first day until 47 days, the ration contains also barley; (5 % in Starter, 10 % in Grower and 15 % in Finisher). These results have been threatened by a general linear process (PROCGLM). Averages have been divided by DUNCAN test.

These studies show that the incorporation of APC (0.2%) in ration with corn and Soya increases the weight 2.52 % ($p < 0.05$) and decreases the conversion rate 3.96 % ($p < 0.05$) adding that the ammonia rate is decreasing around 50 % ($p < 0.05$) and the benefice is 15.49% for one Kilogramme meat produced.

When the ration contains barley, APC cannot optimize the benefice and the result is similar as the ration with corn and Soya.

The incorporation of APC, Natural feed additive blends, in ration ameliorate the carcass rate and meat brechet and also the number of total coliforms in digest if tube. This reduction is more important when the ration doesn't contain Barley.



OBJECTIF:

This trial evaluates the effect of APC, natural feed additive blends, for zoo technical and sanitary performances of broilers.

MATERIALS and METHODS:

Animals:

1500 chicks produced by poultry Tunisian Society have been used in this trial.

Methods:

Chicks have been randomised with four treatments and repetitions, 93 chicks for each repetition

Feeds:

Twelve feeds have been tested to compare the effect of APC with or without Barley for performance in different stages of broiler breeding.

Flock 1 = Flock (Barley⁻ APC⁻) = Conventional flock: This flock receives an ordinary feed during the period of the trial.

Flock 2 = Flock (Barley⁻ APC⁺): This flock receives a ration which contains APC 0.2% during the trial.

Flock 3 = Flock (Barley⁺ APC⁻): This flock receives a ration which contains Barley 5% in Starter, 10 % in Grower and 15% in Finisher.

Flock 4 = Flock (Barley⁺ APC⁺): This flock contains APC (0.2%) and also Barley 5% in Starter, 10 % in Grower and 15 % in Finisher.

Experimental formulas feed:

%	Starter (0 – 21j)				Grower (22j – 42j)				Finisher (+ 42j)			
	Lot 1	Lot 2	Lot 3	Lot 4	Lot 1	Lot 2	Lot 3	Lot 4	Lot 1	Lot 2	Lot 3	Lot 4
Corn	65.00	70.00	60.35	65.00	68.00	74.00	59.00	63.50	71.00	76.00	55.00	62.00
Soya	31.00	26.00	30.65	26.00	28.00	22.00	27.00	22.50	25.00	20.00	25.60	19.00
Barley	00.00	00.00	05.00	05.00	00.00	00.00	10.00	10.00	00.00	00.00	15.00	15.00
CMV	04.00	04.00	04.00	04.00	04.00	04.00	04.00	04.00	04.00	04.00	04.00	04.00
APC	-	+	-	+	-	+	-	+	-	+	-	+

Parameters:



Zoo technical Parameters:

Feed intake, Conversion rate, Weight, Daily gain and also the mortality have been mentioned every week.

Environmental parameters:

Temperature and hygrometry (HR) have been mentioned every day. For ammonia rate. It has been measured the thirty fifth day.

Faeces:

In the forty fifth days, fresh samples of faeces have been extracted to three broilers for each group and transported to a laboratory for determining the dry matter, phosphor and azote.

Economical parameters:

In the end of the trial, five samples have been identified for each flock to determinate the percentage of meat brechet.

Measure of PH intestine and bacteriology study

The measure of PH has been made directly after slaughtering of broilers. Wrapping indicated of PH have been used and after intestines have been ligatured in plastic bags and transported to a bacteriology laboratory for analysis in National applied sciences institute (INSAT) to determinate the Total coliforms.

Statistic study

Results have been threaten by procedure general linear (PROCGLM). Averages have been separated by Duncan Test.

RESULTS and DISCUSSION

Results

Quantity of feed intake during 47 days

Results don't give a significate difference ($p < 0.05$) between quantities of feed intake for different groups during 47 days.

Group	Quantity of feed intake (kg)
Conventional	4.3104 ^a
Barley - APC ⁺	4.2257 ^a
Barley ⁺ APC ⁻	4.4884 ^a
Barley ⁺ APC ⁺	4.1136 ^a
± SEM	0.0029

Numbers in the same colone which have different letters are significantly different



Weight at 47 days

If we compare the difference of weight between different flocks, we deduct that APC 'Natural feed additive blends' ameliorate significantly ($p < 0.05$) the weight. However, the addition of the product in ration with Barley doesn't permit the increasing of the weight.

Group	Weight at 47 jour (g)
Conventional	1982.7184 ^b
Barley - APC ⁺	2030.2926 ^a
Barley ⁺ APC ⁻	1860.3673 ^c
Barley ⁺ APC ⁺	1860.8158 ^c
± SEM	49.5

Numbers of the same colone which have different letters are significantly different

Conversion rate:

The study of conversion rate for each flock gives that the incorporation of 'APC natural feed additive blends (0.2%) ameliorate significantly the conversion rate.

Group	Conversion rate
Conventional	2.17 ^b
Barley - APC ⁺	2.08 ^a
Barley ⁺ APC ⁻	2.31 ^d
Barley ⁺ APC ⁺	2.21 ^c
± SEM	0.0004

Numbers of the same colone which have different letters are significantly different

Results of faeces analysis:

Analysis of faeces in the forty fifth day show that the incorporation of 'APC 'Natural feed additive blends' with or without Barley decreases the phosphor and azote rate

Group	Dry matter %	Phosphor %	Total azote %
Conventional	20.94	0.35	0.81
Barley APC ⁺	24.55	0.22	0.68
Barley ⁺ APC ⁻	21.12	0.50	0.71
Barley ⁺ APC ⁺	20.20	0.31	0.58



Carcass rate and the percentage of brechet meat

Studies of carcass rate and the percentage of brechet meat show that that the incorporation of APC 'Natural additives blends' ameliorates two parameters.

Group	Carcass rate	Percentage of brechet meat
Conventional	0.5884	33.7853
Barley ⁻ APC ⁺	0.5960	35.2604
Barley ⁺ APC ⁻	0.5507	30.5892
Barley ⁺ APC ⁺	0.5898	33.8532

Measure of intestine PH:

The supply of APC 'Natural feed additive blends' in the ration of broilers decreases t H⁺ in caecum.

Group	Concentration of H ⁺
Conventional	3,16.10 ⁻⁶
Barley ⁻ APC ⁺	1.10 ⁻⁶
Barley ⁺ APC ⁻	3,16.10 ⁻⁶
Barley ⁺ APC ⁺	1.10 ⁻⁶

Numeration of total coliforms in digestive tube:

The numeration of total coliforms in digestive tube of four broilers for each flock show a significate reduction (p<0.05) of germ's numbers for APC flock during 47 days. This reduction is more important when the ration contains barley.

Group	Total coliforms (10 UFC/ml)
Conventional	62 ^c
Barley ⁻ APC ⁺	0.71 ^a
Barley ⁺ APC ⁻	216 ^d
Barley ⁺ APC ⁺	20 ^b

Numbers in the same colone which have different letters are significantly different (p<0.05)



Mortality:

The incorporation of APC 'Natural additives blend' (0.2%) decreases the mortality

<i>Group</i>	<i>Mortality (%)</i>
<i>Conventional</i>	<i>3.4031</i>
<i>Barley APC⁺</i>	<i>3.0837</i>
<i>Barley⁺ APC⁻</i>	<i>5.4347</i>
<i>Barley⁺ APC⁺</i>	<i>4.0264</i>

Measuring of ammonia:

The Measuring of ammonia made thirty two days for each flock show that the Incorporation of APC 'Natural feed additive blends' (0.2%) in ration decreases the ammonia rate around 50 % comparing the conventional flock.

<i>Group</i>	<i>Ammonia rate (ppm)</i>
<i>Conventional</i>	<i>30</i>
<i>Barley APC⁺</i>	<i>18</i>
<i>Barley⁺ APC⁻</i>	<i>50</i>
<i>Barley⁺ APC⁺</i>	<i>20</i>

The promotor effect of APC:

The promoter effect of APC 'natural feed additive blends' is estimated with different necessary costs for production of meat's kilogram. The calculation takes importance to price and every raw material in the ration and also the conversion rate for each group.

<i>Group</i>	<i>Gain/kg meat DT</i>	<i>Gain/kg meat (%)</i>
<i>Barley APC⁺</i>	<i>0.2649</i>	<i>15.4992</i>
<i>Barley⁺ APC⁻</i>	<i>0.2044</i>	<i>11.9596</i>
<i>Barley⁺ APC⁺</i>	<i>0.4309</i>	<i>25.2068</i>



Effects of ‘APC Natural additives blends ‘in Performance of layers

Dridi. Amor¹, El Gharbi. Mustapha², Abdallah Sofiène³.

¹Service of poultry farming and poultry pathology, National veterinary school of Sidi Thabet – Tunisia

² Professional centre of poultry formation, 2020- Sidi Thabet, Assistant in veterinary medicine

³ Service of poultry farming and poultry pathology, national veterinary school, 2020- Sidi thabet – Tunisia.

Summary

The trial has been made with 1860 layers, Hyline W 98 breed. The age of layers is 58 weeks and divided in two groups. The conventional group called ‘APC - : The ration doesn’t contain APC and the experimental group called ‘APC+ ‘receive an APC feed.

The results found have been threatened by general linear process (PROCGLM) and averages are divided by Duncan Test. This study show that the incorporation of ‘APC Natural feed additive blend’ (0.2%) in ration of layers decreases significantly the conversion rate and the rate of broken eggs and increases significantly ($p < 0.05$). The weight of eggs, the height of egg and the thickness of shell. However, any effect has been showed ($p < 0.05$) for the form index and the color of yolk.

OBJECTIF:

This trial has been made to evaluate the effect of ‘APC natural additive blends’ for zoo - technical performances and the quality of eggs.

MATERIALS ET METHODS:

Animals:

The trial has been made with 1860, Hyline W98 breed, and the age of layers is 58 weeks divided in two groups:

- Conventional group called (APC -): The ration don’t contain APC additives
- Experimental group called (APC +): It receives the APC feeds.

Feeds:

Two types of feeds have been used during the trial

APC - : feed for conventional flock, it doesn’t contain additives APC

APC +: feed for experimental flock. It contains additives APC incorporated in CMV (5%).

Formulas have been calculated by Software MUR (Cornel university, 1992) (cf; table1)



Table 1

<i>%</i>	<i>APC+</i>	<i>APC-</i>
<i>Corn</i>	56.910	48.708
<i>Soya</i>	16.500	23.393
<i>Barley</i>	15.000	15.000
<i>CMV</i>	4.000	4.000
<i>Oil</i>	1.000	1.000
<i>Limestone</i>	6.590	7.699
<i>Salt</i>		0.200

Parameters:**Zoo technical Parameters:**

The rate of laying, the conversion rate, the mortality and the percentage of broilers have been recorded for comparison.

Quality of eggs:

Parameters recorded are the weight of eggs, form index, colour of yolk, the height of egg and the thickness of shell.

Statistic study:

Results have been threaten by general linear process (PROCGLM). Average have been divided by Duncan test.

RESULTS and DISCUSSION**Results****Zoo technical parameters:**

Results concerning zoo technical parameters reveal that the incorporation of ‘APC Natural feed additive blends’ in ration of layers decreases the conversion rate, the percentage of broken eggs, but any significantly effect about weekly rate of laying and the mortality (cf.table 2).

Table 2

	<i>Rate of laying %</i>	<i>Conversion rate</i>	<i>Mortality</i>	<i>Percentage of broken eggs</i>
<i>Experimental group (APC+)</i>	77.906 ^a	2.372 ^a	0.6440 ^a	1.7449 ^b
<i>Conventional group (APC-)</i>	76.380 ^a	2.442 ^b	0.9149 ^a	2.0636 ^a
<i>± SEM</i>	0.9231	0.021	0.0123	0.1012

Numbers in the same colone which have different letter are significantly different



Quality of egg:

The results concerned a quality of egg show that the ‘APC Natural additives blend ‘ Influence positively the weight of egg, the height of albumen and the thickness of shell However, any effect didn’t show for form index and colour of yolk.

Table 3

	<i>Weight of egg (g)</i>	<i>Indice of form</i>	<i>Color of yolk</i>	<i>Height of egg (mm)</i>	<i>Thickness Of shell</i>
<i>Experimental group (APC+)</i>	64.923 ^a	76.250 ^a	9.2750 ^a	5.4250 ^a	0.3472 ^a
<i>Conventional group (APC-)</i>	64.330 ^b	76.250 ^a	9.2167 ^a	4.8083 ^b	0.3380 ^b
<i>± SEM</i>	1.2711	1.211	0.016	0.1231	0.0011

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Effect of incorporation 'APC Natural additives blend in performance of breeders

*Dridi. Amor*¹, *El Gharbi. Mustapha*², *Abdallah Sofiène*³.

¹Service of poultry farming and poultry pathology, National veterinary school of Sidi Thabet – Tunisia

² Professional centre of poultry formation, 2020- Sidi Thabet, Assistant in veterinary medicine

³ Service of poultry farming and poultry pathology, national veterinary school, 2020- Sidi thabet – Tunisia.

Summary

Results found have been threaten by general linear process (PROCGLM). Averages have been divided by Duncan Test. This research show that the incorporation of 'APC Natural feed additive blend' (0.2%) in ration of layers ameliorate ($p < 0.05$) the rate of laying, the conversion rate, the rate of hatching and the weight of chicks. It doesn't have any effect for the mortality and the rate of broken eggs.

OBJECTIF:

The effect has been made to evaluate the effect of 'APC Natural feed additives blend' for zoo technical performances and the quality of egg of breeder.

MATERIALS and METHODS:

Animals:

The trial has been made with 1860 layers, hyline W98 breed, the age is 58 weeks and it is divided in two flocks.

Feeds:

Two types of feeds have been used during the trial:

- APC - : Feed for conventional group. It doesn't contain APC.
- APC + : Feed for APC group. It contains APC which is incorporated in CMV (5%).

These formulas have been calculated by Software MUR (Cornel University, 1994) (cf. table 1)



Table 1

%	APC+	APC-
Corn	57.487	51.725
Soya	10.000	18.213
Barley	18.000	15.000
CMV	4.000	4.000
Oil	1.000	1.097
Limestone	4.513	7.632
Wheat-bran	5.000	2.333

Parameters :

Zoo technical Parameters:

The rate of laying, the conversion rate, the mortality, the rate of broken eggs, the rate of hatching and the weight of egg have been recorded for comparison

Quality of egg:

These two parameters have been studied: the weight of egg and the thickness of shell

Statistic study

Results have been threaten by general linear process. Averages have been divided by Duncan test (Steel and Torrie, 1980). Results are significantly positive when $p < 0.05$.

RESULTS and DISCUSSION

Results

Zoo technical Parameters:

Zoo technical results reveal that the supply of ‘APC feed additive blends’ in breeder’s ration ameliorates ($p < 0.05$) the rate of laying, the conversion rate, the rate of hatching and the weight of chicks. However, the rate of broken eggs and the mortality don’t have any significantly effect.

Table 2

	Rate of laying (%)	Conversion rate	Mortality (%)	Brocken eggs	Rate of Hatching (%)	Weight of chicks (g)
Experimental group (APC+)	67.0920 ^a	2.57 ^b	0.8251 ^a	3.490 ^a	86.67 ^a	48.42 ^a
Conventional group (APC-)	65.6157 ^b	2.922 ^a	1.0194 ^a	3.866 ^a	85.213 ^b	46.01 ^b
± SEM	0.2111	0.0121	0.2115	0.2115		

Numbers in the same colone which have different letters are significantly different

Quality of egg:



Results about quality of egg show that the supply of ‘APC Natural feed additive blends’ influences significantly positive ($p < 0.05$) the thickness of shell.(cf. table 3).

Table 3

	<i>Weight of egg (g)</i>	<i>Thickness of shell</i>
<i>Experimental group (APC+)</i>	69.390	0.3254^a
<i>Conventional group (APC-)</i>	69.310	0.3156^b

Numbers in the same colone which have different letters are significantly different