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**EFFECT OF DIETARY FOLIC ACID  
SUPPLEMENTATION ON PRODUCTION AND  
HATCHING PERFORMANCE IN BAHEIJ CHICKEN  
STRAIN**

**By**

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**Abstract:** *The objectives of this study were to investigate the effect of dietary folic acid levels on productive performance of Baheij as a local Egyptian chicken strain and the transfer of folic acid in the eggs as related to hatchability and egg weight loss during incubation and hatched chick weight. One hundred and five laying hens and 21 cocks aged 32 weeks of age from Baheij chicken strain were randomly divided into 7 treatment groups with 3 replicates each. First treatment was considered as a negative control diet and fed a diet containing 0 folic acid (premix free from folic acid). The second one was considered as positive control containing 1 mg folic acid/kg diet. The other experimented diet groups contained 2, 4, 8, 16 and 32 mg folic acid/kg diet, respectively. Feeding the treatment diets began 14 days before the start of egg collection and last for 8 weeks. Results revealed that dietary folic acid supplementation levels had no significant effect on egg production, feed consumption and feed conversion. Besides folic acid levels had no significant effect on most of the egg quality traits except for eggshell thickness, egg shape index and yolk percentage. The increase of folic acid levels in the diet from 0 to 2 mg/kg diet had increased the total egg folate concentration from 12.26 to 34.64 µg/egg. This study provides strong evidence of sensitivity of egg folate concentration to dietary folic acid levels. Also, dietary folic acid levels had no significant effect on fertility, hatchability and egg weight loss during incubation. Best significant weight of baby hatched chicks had been produced with the dose of 32 mg folic/kg diet while the other used levels had numerical increase of chick body weight.*



## PERFORMANCE OF LAYING JAPANESE QUAIL FED LOW PROTEIN DIETS SUPPLEMENTED WITH METHIONINE AND LYSINE.

By

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**Abstract:** *A total number of 420 female Japanese quail 8 weeks of age were randomly distributed into 7 treatments, each containing 60 laying quail hens in three equal replicates. Four dietary crude protein levels were used in this work to study the effect of different levels of crude protein on the performance of laying quail hens. Crude protein levels were optimum level (22 %, T1), medium level (20 %, T2) and low levels (18 %, T3 and 16 %, T4). The diet contained 22 % CP and optimal levels of amino acids (T1) represents the control group . While, the other three diets were deficient in essential amino acids. Therefore, synthetic methionine and lysine were supplemented to these diets in order to maintain constant recommended levels of both methionine and lysine and considered as T5, T6 and T7, respectively. Laying quail hens were kept in cleaned and fumigated cages of wire floored batteries under similar conditions of management. Water and feed were offered ad-libitum under total of 16 hours light / day regimen up to 25 weeks of age.*

*The overall results showed that feeding laying quail hens on diets containing medium or low levels of crude protein recorded significant decrease in egg production, egg weight and egg mass and increase in feed conversion values compared to the control group. However, feed intake values significantly increased gradually with decreasing dietary crude protein levels . Supplementing both methionine and lysine to laying quail hen diets which containing medium or low levels of crude protein improved their performance of laying quail hens especially with medium protein diet . There was no improvement in economic efficiency values due to feeding laying quail hens on medium or low protein diets either with or without supplemental methionine and lysine.*

## **EFFECT OF VITAMIN E SUPPLEMENTATION ON PERFORMANCE OF LAYING HENS DURING SUMMER MONTHS UNDER THE DESERT CONDITIONS**

by

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**abstract:** *this experiment was carried out to study the effect of different levels of vitamin e supplementation on performance and some blood constituents of laying hens during the summer months. a total number of 75 hens (hy-line brown-egg type) of 24 weeks of age were randomly assigned into five experimental treatment groups, 15 hens each treatment group. treatment groups were fed a basal diet (control diet) containing 24.52 mg/kg vit. e or basal diet supplementation with vit e (125, 250, 375 and 500 mg/kg diet). each treatment was divided into five replicates, three hens in five cages per treatment up to 36 weeks of age.*

*the level of vit. e supplementation up to 250 mg/kg diet showed the heaviest insignificant values in final body weight (1931g) and body weight changes (329.33g) in contrast to the control group (1817g and 223.33g, respectively).*

*the inclusion of vit e 375mg/kg diets showed the highest insignificant values of egg number, egg production, egg weight and egg mass as compared to the other experimental groups during the interval and the whole experimental periods. vit e supplementation up to 375 mg/kg in laying diets resulted in higher significant ( $p < 0.01$ ) values of feed consumption, during the months (june and august) and overall mean than the control group. in addition, vit. e 375mg/kg diet showed the best insignificant values of feed conversion throughout the interval and the whole experimental period.*

*the inclusion of vit. e at levels (375 –500 mg/kg diet) showed insignificant improvement of yolk weight (%), yolk index (%), shell weight (%), and shell parameters (shell weight, shell thickness, shell weight per unit surface area and egg shell volume) when compared with the other levels.*

*hens fed a diet containing vt.i e (375-500 mg/kg diet) had significant ( $p < 0.01$ ) an increase in plasma activities of got, gpt, triglyceride and both*

*ca and p concentration as compared with the other experimental groups. however, plasma albumin, total protein and globulin were not significantly influenced by vit.e supplementation.*

*it could be concluded that the use of vitamin e at level of (375 mg/kg diet) in laying hen diets during summer months, under the desert condition in egypt. this level would alleviate adverse effects of high ambient temperature on egg performance, egg shell quality and some blood constituents.*

## EVALUATION OF SOME NATURAL FEED ADDITIVE IN LAYER DIETS

BY

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**ABSTRACT:** *the objective of this work was to study the impact of addition of natural feed additives as dinaferm (saccharomyces cerevisiae), biotop (bacillus subtilis and bacillus licheniform) and black seed oil versus, some antibiotics as amoxicillin and zinc bacitracin to laying hen diets on productive performance, serum components, digestibility, semen quality, fertility, hatchability and economical efficiency. a total number of 180 layer hens and 24 cockerels of local strain "al - salam" were fed the experimental diets from 32 to 43 weeks of age. layer hens and cockerels were divided into 6 treatment groups in individual cages in open system. the first group were used as control (fed without any additives), while the other five groups were fed the same control diet supplemented with dinaferm, biotop, black seed oil, amoxicillin and zinc bacitracin at levels of 0.1, 0.1, 0.1, 0.02% and 0.05%, respectively. the results showed that, addition of different feed additives significantly ( $p < 0.05$ ) improved egg number (en), egg mass (em) and feed conversion (fc) while, insignificantly affected egg weight (ew) as compared to the control group. addition of dinaferm was increased significantly ( $p < 0.05$ ) en and em than control and other treated groups. the highest values of en and the best fc were recorded by dinaferm addition. addition of dinaferm increased significantly ( $p < 0.05$ ) feed intake (fi), while, amoxicillin and zinc bacitracin addition decreased significantly ( $p < 0.05$ ) fi as compared to the control group. addition of different feed additives to laying hen diets insignificantly affected on globulin, globulin / albumin ratio and cholesterol as compared to the control group. addition of dinaferm, amoxicillin and zinc bacitracin increased significantly ( $p < 0.05$ ) total protein and albumin while, biotop and black seed oil addition insignificantly affected total protein and albumin as compared to the control group. the addition of feed additives insignificantly affected most digestibility coefficient parameters while, amoxicillin and zinc bacitracin addition*

*decreased significantly ( $p < 0.05$ ) digestion coefficients of dry matter (dm), organic matter (om) and crude protein (cp) as compared to the control group. addition of different feed additives improved significantly ( $p < 0.05$ ) semen - ejaculate value, sperm – cell concentration ( $\times 10^6/\text{ml.}$ ) and sperm motility % while, decreased significantly ( $p < 0.05$ ) dead spermatozoa and sperm abnormalities as compared to the control group. addition of dinaferm and zinc bacitracin improved significantly ( $p < 0.05$ ) fertility and hatchability percentage, as compared to control group. the best relative economical efficiency was recorded by dinaferm flowed by black seed oil addition compared to the control and other treated groups.*

*it was concluded that natural feed additives dinaferm, biotop and black seed oil could serve in laying hens diets. however, further research is required to better understand the role of natural feed additives in poultry nutrition and their implications in human health.*

**EFFECT OF DIETARY COTULA *CINEREA* MEAL  
LEVELS ON PERFORMANCE, DIGESTIBILITY,  
CARCASS TRAITS AND MICROBIAL STATUS OF  
GROWING RABBITS UNDER DESERT CONDITIONS**

**BY**

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**Abstract:** *An experiment was conducted to investigate the effect of different dietary levels of Cotula cinerea meal (CCM) to substitute 2, 4, 8, 12, 16 and 20 % of the total feed mixture on the expense of alfalfa hay in growing rabbit diets on growth performance, nutrients digestibility, carcass traits and some microbial fermentations in digestive tract as an indicator for using it as anti microbial agent under desert conditions.*

*A total of 112 growing New Zealand white rabbits of both sexes (5 weeks old) were housed in equal 7 groups (16 rabbits per group, 8♂ + 8♀) each in four replicates. The control group and other six experimental groups were received isonitrogenous (16.0% CP) and iso caloric (2500 K cal DE/kg) diets. The proximate analysis showed that CCM (on air dry basis) contained 4.45% moisture, 72.35% organic matter (OM), 14.0% crude protein (CP), 14.9% crude fiber (CF); 3.0 % ether extract (EE), 22.20% ash and 40.45% nitrogen free extract (NFE). While, its digestible energy content was 2430 k cal/kg indicating its nutritious value in addition to its active medicinal substances. At 9, 11, 13 weeks of age: live body weight; body weight gain, feed conversion ratio (FCR), performance index (PI) and daily body weight gain were significantly ( $p < 0.05$ ) improved for rabbits received diet containing 16% CCM. While feed intake (g/rabbit) during experiment period was significantly ( $p < 0.05$ ) increased by increasing CCM level up to 16 % CCM then depressed with 20% levels. Mortality rate decreased for groups, fed 0, 2, 4, 8, 12, or 16% while increased at 20% CCM. Using 16% CCM in rabbit diets instead of alfalfa hay significantly ( $p < 0.05$ ) improved digestibility of CF and EE. However, digestibility of OM, CP and NFE were insignificantly affected. Group fed 16% CCM showed better dressing %*

*than other groups, but ash content of meat increased by increasing dietary CCM level perhaps due to high ash content in Cotula cineria.*

*Total bacteria counts (TBC) was significantly ( $p < 0.05$ ) decreased in ileal and cecal contents by increasing dietary CCM level. As expected, increasing dietary CCM significantly ( $p < 0.05$ ) decreased pH of the caecum, indicating the protective effect of CCM against enteropathogenic *E. Coli* infection by increasing VFA concentration. Groups fed 8, 16 % dietary CCM achieved better economic efficiency (EEf) than other treatments, but, the group fed 16% CCM recorded the best net revenue and FCR. It is recommended to use *Cotula cinerea* meal (CCM) up to 16% as substitute for alfalfa hay of growing rabbit diets, to improve performance, digestibility, rabbit viability, carcass characteristics, economic efficiency and as a protector against some pathogenic bacteria.*

*Cotula cinerea meal (CCM), digestibility, performance index (PI), Total Count Bacteria (TCB), economic efficiency.*

## NOVEL METHODS OF DETOXIFICATION OF AFLATOXIN B 1 IN CONTAMINATED LOCAL LAYING HEN DIETS

By

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**Abstract:** *A total number of 224 hens plus 49 cocks from El-Salam strain of 30 weeks old were divided into 7 groups with 4 replicates each (8 hens + 1 cock). The remaining 21 cocks were also divided into 7 groups of 3 cocks each and housed separately for semen evaluation. Hens of treatment 1 received a basal layer diet (as a control diet). Hens of treatment 2 received the basal diet plus 1000 ppb aflatoxin B<sub>1</sub> (AF-diet). Hens of treatments 3, 4, 5, 6 and 7 were received the AF-diet supplemented with 0.5% hydrated sodium calcium aluminosilicate (HSCAS), 0.5% HSCAS+1% radish extract (RE), 1% RE+ 1% sodium sulphate (SS), 0.5% HSCAS+1% SS or 2.5% mixture of HRS 0.5% HSCAS + 1%RE+1%SS, respectively. The experimental groups were fed on the experimental diets from 30 to 34 weeks (treatment period), then they were fed the control diet from 34 to 38 weeks (recovery period). Main results obtained can be summarized as follow:*

- 1- Hens fed AF-diet without additives recorded the lowest values of body weight gain, egg number, egg weight, egg mass, feed intake and the worst feed conversion. Also, AF-diet alter egg quality parameters.*
- 2- Relative weight of liver, spleen, and heart significantly increased while ovarian relative weight decreased in groups fed AF-diet.*
- 3- Liver lipid and serum alkaline phosphatase significantly increased while yolk cholesterol and serum calcium, phosphorus and triglycerides decreased in hens fed AF-diet. Also, AF-diet decreased semen volume, concentration and mass motility while sperm abnormality and percentage of dead sperms increased.*

*4- AF-diet decreased fertility, hatchability of eggs, chick weight at hatch and increasing chick abnormality. Also, hens fed AF-diet recorded the highest value of AFB<sub>1</sub> residue in egg yolk.*

*5- All feed additive used in this study decreased the negative effects of toxicity due to aflatoxicosis for all studied criteria. The combination of HSCAS and SS was the most successful additive in this study, compared to the others.*

## GENETIC AND PHENOTYPIC PARAMETERS OF PRODUCTIVE AND REPRODUCTIVE TRAITS IN FIVE RABBIT BREEDS

By

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**ABSTRACT:** *This experiment was carried out at Sakha experimental Farm, Kafr El-Sheikh, during the period from October 2000 to July 2003. Breeds used in this study were four foreign breeds, New Zealand White (NZW), California (Cal), Bauscat (Baus), and Flander (Flan), in addition to Baladi Black (BB) rabbit as a local breed. Studied traits are litter size at birth (LSB), litter weight at birth (LWB), bunny weight at weaning (WW) and marketing weight at 8 weeks (MW). The model used in the analysis included, the random effects of direct additive genetic, permanent environmental and residual. The fixed effects are month and year of kindling, parity and sex.*

*Preliminary analysis of data, showed the significant effect of breed, month and year of kindling and parity ( $P < 0.05$  or  $P < 0.01$ ) for all traits that studied, while sex had no significant effect. Estimates of direct heritability for LSB were 0.63, 0.79, 0.60, 0.61 and 0.69 for NZW, Cal, Baus, Flan and BB, respectively. Heritability estimates for LWB, WW and MW were 0.56, 0.57 and 0.81 for NZW, 0.99, 0.85 and 0.79 for Cal, 0.59, 0.48 and 0.66 for Baus, 0.60, 0.46 and 0.63 for Flan and 0.70, 0.64 and 0.77 for BB, respectively.*

*Phenotypic correlations among litter size and litter weight at birth were positive and moderate. Also, phenotypic correlation between bunny weight at weaning and marketing weight were positive. However, estimates of phenotypic correlations between litter size at birth and both bunny weight at weaning and marketing weight were negative. Genetic correlations among all studied traits for each breed are similar in magnitude and their direction to the corresponding estimate of phenotypic correlations.*

## **EFFECT OF USING COMMERCIAL AND NATURAL GROWTH PROMOTERS ON THE PERFORMANCE OF COMMERCIAL LAYING HENS**

**By**

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**Abstract:** *The present study aimed to investigate the impact of probiotic as commercial growth promoter and either fenugreek or black seed as natural growth promoter at levels of 0.05, 0.1 and 0.15% in practical laying diets on productive performance and economical efficiency during 40-59 weeks of age.*

*A total number of 240 Hy-Line White laying hens were distributed into 10 equal groups , each of 24 birds in four replicates .The first group received the basal diet without any supplementation, whereas the other groups were given the basal diet supplemented with either probiotic, fenugreek or black seed each at levels of 0.05 , 0.1 and 0.15% . The results obtained could be summarized as follows:*

- 1- The highest body weight at 59 weeks of age was obtained from 0.05% inclusion level of each of probiotic, fenugreek and black seed. However, fenugreek treatment was significantly surpassed over all dietary treatments.*
- 2- The inclusion level of either 0.1% probiotic, 0.05 and 0.15% fenugreek or 0.1 and 0.15% black seed significantly gave higher egg production than those of control group. However, fenugreek and black seed were insignificantly superior than the probiotic group.*
- 3- Inclusion levels of probiotic, 0.05% fenugreek or 0.05 and 0.15% of black seed significantly increased egg weight. Moreover, egg mass was significantly increased with all studied levels of probiotic, black seed and 0.05% and 0.15% fenugreek .*
- 4- There were no significant differences in feed consumption among all dietary treatments including the control group. While, feed conversion was significantly ( $P < 0.05$ ) improved at levels of 0.1, 0.05 and 0.15% for probiotic, fenugreek and black seed, respectively.*

- 5- *There were insignificant increase ( $P < 0.05$ ) in egg shape index (SI), yolk index (YI) and shell thickness (ST) and significant effect on Haugh units (HU) for all treatments. Furthermore, probiotic at 0.1% level, fenugreek at 0.15% and black seed at all levels had significant increase on yolk color (YC).*
- 6- *Probiotic, fenugreek and black seed inclusion had significant effects ( $p < 0.05$ ) in decreasing yolk total cholesterol compared with the control group and had no significant effect on total lipids of egg yolk.*
- 7- *Either probiotic, fenugreek or black seed had no positive effect on unsaturated fatty acids of egg yolk oppositely, they had positive effect on some saturated fatty acids like Palmitic acid (C<sub>16:0</sub>).*
- 8- *Economic evaluation for egg production was improved by using all dietary treatments. However, the best value was achieved by using 0.05% fenugreek, 0.15% black seed and 0.1% probiotic.*

## **EFFECT OF DIETARY LEVELS OF CALCIUM AND VITAMIN D<sub>3</sub> AND THEIR INTERACTIONS ON THE PERFORMANCE OF JAPANESE QUAIL CHICKS.**

By

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**Abstract:** *A total number of 450 unsexed day-old Japanese quail chicks were used to study the effect of different dietary levels of Ca , vit.D<sub>3</sub> and their relationship on the performance of Japanese quail chicks. Chicks were randomly distributed into 6 equal groups of 3 replicates each. Three levels of calcium (0.8, 1.0 & 1.2 %) and 2 levels of vit.D<sub>3</sub> (1100 control & 2200 IU) were added to 6 starter-grower corn-soybean meal experimental diets that formulated to be of iso-nutritive value (24 % CP & 2900 kcal ME/kg). Three levels of calcium (2.5, 3.0 & 3.5 %) and 2 levels of vit.D<sub>3</sub> (1100 control & 2200 IU) were also added to 6 layer corn-soybean meal experimental diets that formulated to be similar in their protein and energy content ( 20 % CP & 2900 kcal ME/kg ).*

*At 42 days of the age, 6 birds from each treatment were slaughtered to determine carcass traits, edible parts, immunological and reproductive organs and tibia bone measurements and analysis. Six blood samples were taken from each group and assayed to determine some serum biochemical parameters. Digestibility trials (3 cocks for each dietary treatment) were conducted to determine nutrients digestibility for different starter-grower experimental diets. At the laying period, egg weight (EW) , mass (EM) and production (EP), feed intake (FI) and conversion (FC) and hatching parameters were recorded. Ten eggs were randomly taken from each treatment every 4 weeks and broken out to determine some egg characteristics.*

*Regarding growing performance, the main results obtained illustrated that feeding diet containing 1.0 % Ca + 1100 or 2200 IU Vit.D<sub>3</sub> gave significant improvement in BW, BWG and FC as compared to the other dietary treatments. It also caused significant increase in carcass, dressing, edible giblets (liver, heart and gizzard), thymus, bursa, spleen, oviduct and ovary and significant decrease in abdominal fat % as compared to the other*

*dietary treatments. It also caused significant increase in the CP and CF digestibility as compared to other dietary treatments. Feeding diet containing Ca at the three mentioned levels + the high level of Vit.D<sub>3</sub> gave significant increase in serum Ca and P levels. Feeding diet containing 1.2 % Ca + Vit.D<sub>3</sub> levels gave significant increase in serum creatinine level.*

*Concerning laying performance, the main results obtained illustrated that feeding diet containing 3.0 % Ca + 1100 or 2200 IU Vit.D<sub>3</sub> gave significant improvement in egg production ( EP), egg number (EN), egg weight (EW), egg mass (EM) and feed conversion (FC) as compared to the other dietary treatments. It also caused significant increase in hatchability %, hatch weight and significant decrease in rickets % as compared to the other dietary treatments. It also caused significant increase in the egg shape index (ESI) %, shell weight (SW) %, shell thickness (ST) and shell Ca and P % as compared to the other dietary treatments.*

**EFFECT OF DIFFERENT LEVELS OF OLIVE PULP  
WITHOUT OR WITH KEMZYME SUPPLEMENTATION  
ON LAYING HENS PERFORMANCE**

**BY**

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**Abstract:** *A(4 X 2) factorial experimental design was conducted to study the effect of different levels of olive pulp (OP)(0, 5, 10 and 15 %) without or with Kemzyme(KM) supplementation (0.0 and 1.0 g/kg) diet on the performance of laying hens. A total number of 120 hens (Hy-Line Brown-egg type) at 20 weeks of age were randomly assigned into eight experimental groups. The experiment continued up to 36 weeks of age.*

*Results showed that hens fed diet containing OP up to 15% recorded the significantly ( $P<0.01$ ) heaviest values in BW and BWC. However, egg production, egg weight and egg mass were not significantly affected by the different levels of OP in laying diet. Moreover, increasing OP up to 15% showed significant increase ( $P<0.01$ ) in feed consumption. However, hens fed control or 5% OP diets showed the insignificantly improved in feed conversion, except during the period (28-32) weeks of age feed conversion was improved significantly ( $P<0.01$ ). Digestibility coefficients of OM%, CF% and NFE % decreased significantly ( $P<0.01$ ) as OP increased up to 10-15 %. However, increasing OP up to 10-15% recorded the highest significant ( $P<0.01$ ) values of EE digestibility. Inclusion of OP at different levels recorded higher significant ( $P<0.01$ ) values of yolk wt. % and decreased feed cost and improved relative economical efficiency.*

*Egg production and egg mass were not significantly affected while, egg weight value was significantly ( $P<0.05$ ) improved and yolk index was significantly ( $P<0.01$ ) lowered by KM supplementation. Daily feed consumption decreased significantly ( $P<0.01$ ) while feed conversion and digestibility coefficient of nutrients were not significantly affected by KM supplementation in laying diet. Moreover, KM supplementation caused increase in feed cost slightly and decrease relative economical efficiency.*

*Hens fed control and 15% OP diets without KM supplementation showed the significant ( $P<0.05$ ) highest values of egg production during (28-32) and (32-36) weeks of age, respectively. Any levels of OP with KM showed the highest insignificant values of egg weight during the whole experimental period. However, 15% OP without KM showed the significant ( $P<0.05$ ) highest values in egg mass during the period (32-36) weeks of age. Feed consumption gradually increased insignificantly with the increasing OP levels without KM supplementation in diet during the total experimental period. Moreover, hens fed control or 5% OP diets without KM showed the best insignificant values of feed conversion during the total experimental period. Digestibility coefficient of OM % gradually decreased significantly ( $P<0.05$ ) with the increasing of OP levels without KM supplementation.*

*It could be recommended to use OP at a level of 15 % without KM supplementation in laying hen diets. This level had no detrimental effects on laying performance and improved relative economical efficiency.*

**THE INFLUENCE OF DATE WASTE MEAL  
SUPPLEMENTED WITH EITHER ENZYMES,  
PROBIOTICS OR THEIR COMBINATION ON BROILER  
PERFORMANCE**

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**Abstract:** *A 35 days feeding trial, utilizing 480 unsexed seven day old broiler chicks was conducted to study the effects of five inclusion levels (0,7,14,21 and 28%) date waste meal (DWM), as a replacement of yellow corn without or with either enzymes, probiotics or their combination on productive performance, carcass yield and digestion coefficients of crude fiber and ash. Birds were randomly divided into 20 groups of 24 chicks each. Each group received one of the five experimental diets without or with one of studied feed additives containing equal ratio of calorie : protein (C/P) under the same managerial conditions. Results obtained during the entire period (35 days) were as follows:*

- 1- The proximate analysis showed that dietary date waste contains substantial amount of nutrients indicating its feeding value as an ingredient in feeding broiler chicks and a promising sources of energy.*
- 2- Dietary date waste may be used at a level up to 21% without adverse effects on live body weight and weight gain.*
- 3- Supplemented diets with a mixture of enzymes and probiotics gave the heaviest LBW compared with the other studied treatments.*
- 4- Replacing yellow corn by date waste meal up to 21 % had no deleterious effects on parameter of feed intake over all the studied growth period. Enzymes and probiotics mixtures supplementation gave statistically equal values in this respect.*
- 5- Substitution of yellow corn by date waste meal without or with either enzymes, probiotics or their combination did not yield any*

*deterioration on feed conversion ratio. Differences among treatments in this respect were insignificant, except for those during the first period (7 days old).*

- 6- Carcass characteristics, breast %, thigh% and water holding capacity (WHC) were not significantly affected by the different experimental treatments of date waste meal. The opposite was true for feed additives addition in respect to thigh percentage. A different trend was observed for abdominal fat percentage where increasing dietary date waste up to 28% increased the abdominal fat % compared with the control group.*
- 7- Increasing dietary date waste meal up to 28% significantly decreased the crude fiber digestibility, whereas that of ash was increased. Feed additives had a beneficial effect on crude fiber and ash digestibility.*

*in conclusion, date waste meal could be included in broiler chicks diet up to 21% without any bad effects on the productive performance. in addition a 28% dietary date waste meal plus enzymes and probiotics mixture supplementation could be ideal for the achieving of optimum broiler performance.*

## THE EFFECT OF TAMOXIFEN ON SOME REPRODUCTIVE TRAITS IN TWO LOCAL CHICKEN STRAINS

### 1. PRECOCIOUS PUBERTY IN TAMOXIFEN TREATED COCKERELS

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**ABSTRACT:** *The aim of this study was to test the effects of tamoxifen (TAM) on semen characteristics and reproductive organs by inducing precocious sexual puberty in two local chicken strains. Sixty, 3-wk-old male chicks from each of Gimmizah and Bandarah local strains were divided into three equal groups 20 chicks each. The chicks were injected intramuscularly twice a week with TAM at doses of 0.5 mg and 1 mg/kg BW respectively, while the controls were injected with 0.2 ml mixture of sunflower oil and ethanol (1:1, v/v). The whole experimental period lasted until 16 weeks of age.*

*The results revealed that all groups treated with TAM had significantly ( $P=0.01$ ) increased body weight especially at 11 and 15 weeks of age. Also Bandarah male chicks had heavier body weight than Gimmizah male chicks at the same period ( $P=0.01$ ). The two doses of TAM also produced semen with live spermatozoa at 7 weeks of age and significantly increased semen physical properties all over experimental period ( $P=0.01$ ) except PH value which was not affected with TAM treatments at 12 weeks of age. There were significant differences between the two strains in ejaculate volume, live sperm % and sperm concentration at the ages of 12 and 14 weeks ( $P=0.05$ ), 10 weeks ( $P=0.01$ ) and 10 and 14 weeks ( $P=0.05$ ), respectively. A rise of serum testosterone content was associated with increase of relative weights of testes and comb and enhanced comb factor at 12 and 16 weeks of age. Moreover, there was a significant decrease ( $P=0.01$ ) in serum total lipids and cholesterol in the TAM treated male chicks at 12 weeks of age. Furthermore, TAM caused a significant decrease in serum calcium and relative weight of abdominal fat at 12 and 16 weeks of age. Bandarah male chicks were lower than Gimmizah male in serum cholesterol. It is concluded that TAM treatment induces precocious puberty and improves semen characteristics in juvenile cockerels.*

## PHYSIOLOGICAL EFFECTS OF GIBBERELIC ACID (GA3) ON SOME PRODUCTIVE AND REPRODUCTIVE TRAITS OF BANDARAH LOCAL CHICKEN STRAIN

By

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**Abstract:** *Ninety females and thirty males of Bandarah local chickens at 45 weeks of age were used to study the physiological effects of gibberellic acid (GA3) on some productive and reproductive traits. Both females and males were individually housed in layer cages and randomly divided into three equal groups (30 females and 10 males in each group). The first group in females and males was injected subcutaneous by solution of ethanol-sesame oil mixture only and served as control, while the second and third groups were injected subcutaneously twice a week by 0.2 ml/kg body weight of ethanol-sesame oil solution which containing 250 and 500 µg GA3/kg. body weight respectively throughout 8 weeks (treatment period). After 8 weeks of treatment, birds were kept without any treatment for 4 weeks as a recovery period.*

*The results of this study indicated that the live body weight and feed consumption of females and males injected with 250 or 500 µg GA3 were significantly ( $P < 0.01$ ) increased especially with the high dose during both treatment and recovery periods compared with the control group. Egg production percentage was significantly ( $P < 0.01$ ) increased especially with the low dose of GA3 during both treatment and recovery periods compared with the control group, while egg weight was not significantly improved during the two periods. Packed cell volume (PCV), hemoglobin (Hb), blood serum glucose and calcium concentration were significantly ( $P < 0.05$ ) increased in females and males after 8 weeks of treatment especially with the high dose of GA3 compared with the control group. In contrast, blood serum total lipid in females and cholesterol in females and males were significantly ( $P < 0.05$ ) decreased during the treatment period compared with the control group. Hens and cocks treated by GA3 conducted to non-significant improvement in their blood serum total protein, GOT, GPT, estradiol and testosterone concentration when compared with the control*

*group during the experimental period. Egg yolk and liver total lipids and cholesterol were significantly ( $P < 0.05$ ) increased after 8 weeks of treatment compared with the control group. Moreover, ejaculate volume, advanced motility, alive sperm, and sperm concentration were significantly ( $P < 0.01$ ) increased by applied GA3 treatment.*

*Non-significant improvement was recorded in relative ovary weight, oviduct and abdominal fat, while relative testis weight was significantly ( $P < 0.05$ ) decreased after 8 weeks of treatment especially with high dose of GA3 compared with the control group. Hatchability percentage was significantly improved with GA3 treatment at the end of experimental period. Relative weight and thickness of egg shell were significantly ( $P < 0.05$ ) increased with GA3 treatment especially with high dose after 8 weeks of treatment compared with the control group.*

**ALLEVIATION THE HARMFUL EFFECT OF HIGH AMBIENT TEMPERATURE DURING SUMMER SEASON ON THE EGG PRODUCTION PERFORMANCE OF FAYOUMI CHICKEN**

**By**

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**Abstract:** *Four equal groups of sixty 20 wk of age of Fayoumi hens. The 1<sup>st</sup> fed the basal diet with normal water (control). The 2<sup>nd</sup> water supplemented with 2g sodium chloride /liter in drinking water. The 3<sup>rd</sup> supplemented of both drinking water with 2g sodium chloride (0,78 g sodium) /liter and basal diet with 1000 mg ascorbic acid /kg diet. The 4<sup>th</sup> supplemented of both water with 2g sodium chloride /liter and basal diet with 100 mg zinc methionine/ kg feed. The experiment was terminated when birds were 36 weeks of age. Birds housed in an open room and exposed to natural high ambient temperature during hot climate of summer season (30°C to 38°C) and the humidity 50% to 75%). Supplementations were to alleviate the harmful effect of high temperature on egg production performance of Fayoumi laying hens*

*Results imply that adding sodium chloride to drinking water and supplementing diets with ascorbic acid or zinc methionine during hot climate of summer season, resulted in a significant ( $P<0.05$ ) increase in body weight at 28, 32 and 36 weeks of age as compared to control group. Besides, feed conversion, feed consumption, egg production and egg mass at 32 and 36 weeks of age and the cumulative at (24-32) and (24-36) weeks of age of the same parameters were significantly ( $P<0.05$ ) improved as compared to control group. Also, the supplementations during hot climate of summer season resulted in a significant ( $P<0.05$ ) improvement in egg quality where, each of egg weight, albumin weight %, shell thickness and egg shell breaking strength were ( $P<0.05$ ) higher than those of control group at 32 or 36 weeks of age. Moreover, supplementing sodium chloride and ascorbic acid caused a significantly ( $P<0.05$ ) increases in plasma calcium and phosphorus at 36 weeks of age as compared to other treatments. But, plasma sodium was not significantly affected by supplementing diets. However, sodium chloride solely in drinking water achieved a significant ( $P<0.05$ ) improvement only in egg shell breaking*

*strength at 32 or 36 weeks of age as compared to control group. The results of the study suggest that Fayoumi layer diets should include 1000 mg ascorbic acid or 100 mg zinc methionine / kg diet with water supplemented by 2g sodium chloride (0,78 g sodium) / liter drinking water, to alleviate the detrimental effect of hot climate stress in order to obtain optimal egg quality or maximal laying performance under hot climate condition among practical and preferable method.*

**LEVEL AND SUGAR OF EGG YOLK THE EFFECT  
TYPE IN THE EXTENDER ON RABBIT SPERM  
STORED AT 5°C**

By

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**Abstract:** *The storage ability of extended rabbit semen in Tris-based and Na-citrate extenders stored for 3 days post collection was studied. Tris-based and sodium-citrate extenders containing three levels of egg yolk (3, 7 and 15%) and three types of sugar (glucose, fructose and lactose) were used. Sperm motility (%), live sperm (%) and normal sperm (%) were recorded for the extended spermatozoa at 24, 48 and 72 hrs. of storage at 5°C, and at 0,1,2,3,4,5 and 6 hrs. of incubation at 37 °C immediately post*

*Sperm motility declined by aging at 5°C and incubation at 37°C regardless of extender or treatment. Na-citrate extender was significantly better than Tris (53.7 and 49.9%, respectively), and fructose (55.7%) was the best followed by glucose (51.5%) and lactose (48.3%) at 24 hrs of storage at 5°C. Effect of egg yolk level (3, 7 and 15%) on sperm viability didn't significantly differ at 24 hrs at 5°C. However, 7% yolk was best as aging of sperm at 5°C advanced. A Na-citrate extender containing 7% yolk and 1.05% fructose might be recommended for rabbit semen storage at 5°C for artificial insemination (A.I.) use.*

## **PRODUCTION PERFORMANCE OF LOCAL GEESE UNDER THE CONDITION OF EGYPTIAN COUNTRY SIDE**

**By**

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**Abstract:** *The present study was carried out at six villages in El-Mahmodia city, Beheira Governorate through season 2004/2005. A total number of 503 four weeks old local goslings (191 males and 312 females) were kept and grown by six farmers under the prevailing local conditions. Goslings were shank banded, weighed on individual basis and housed in simple houses. Birds were exposed to natural daylight, fed green forage and rice on the pasture and swimming in water ducts. Nature mating was practiced during the period from November to the end of May with a male: female ratio ranged from 1:3 to 1:4. A total number of 845 eggs were collected and weighed for the nearest gram and 338 eggs were broken to study and measure the egg quality traits as a percentage of egg weight. Natural hatching was used and about 12 hatches were taken per each farm.*

**The main results could be summarized as follows:**

- 1- Body weight for both sexes of goslings raised in winter had significantly higher means than those of the fall and spring seasons at 4, 8, 12, 16, 20, 24, 28 and 32 weeks of age.*
- 2-The overall means of mortality percentage in fall, winter and spring seasons from 4-32 weeks of age were 16.98, 11.76 and 16.98% for males and 14.86, 10.42 and 13.13% for females, respectively.*
- 3-Geese raised during winter season had higher significant fertility and hatchability percentages (84.31 and 73.38%) than those raised in fall season (76.96 and 64.39%).*
- 4-The age at 50% egg production ranged between 36.78 and 41.26 weeks and the goslings raised in spring had a smaller age (37.57 weeks) than those of goslings raised in winter (38.71 weeks) and fall (40.15 weeks).*

- 5- *The average number of eggs laid / geese/week were 1.33, 1.74 and 1.44 egg with the average egg weight of 134.60, 144.34 and 138.66 g. in fall, winter and spring seasons, respectively. These values for geese raised in winter exelled those raised in fall and spring.*
- 6- *Shell and yolk weight as a percentage of egg weight and shell thickness (mm) were higher for the winter season than the other two seasons, while the reverse was recorded for albumin.*
- \* *Generally, geese raised in winter season recorded superior values than those of spring and fall for all studied traits except age at 50% egg production which was the best for geese raised in spring season.*

**THE PIGEONS (COLUMBA LIVIA DOMESTICA):  
A REVIEW**

By

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## **RESPONSE OF COMMERCIAL LAYERS TO HOUSING AT DIFFERENT CAGE DENSITIES AND HEAT STRESS CONDITIONS.**

### **2-PRODUCTIVE PERFORMANCE AND EGG QUALITY**

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**Abstract:** *An experiment was conducted to test the hypothesis that commercial white egg layers, caged at lower densities, would dampen the deleterious effects of heat stress on productive performance and egg quality. A total of 936, fifty seven weeks old, Lohman Selected Leghorn hens, were used in this experiment. Hens were originally divided, at eighteen weeks of age at random, into two groups (468/each), and were housed in two different conventional open-sided houses. Pullets were placed at 4, 5, 6, 7, 8 and 9 birds per cage in wire cages (60 cm wide by 50 cm deep and 40 cm height). At 58 weeks of age, the first group was exposed to high temperature, ranging from 40–42°C and 65–70% relative humidity (five hours daily for seven consecutive days). After each daily heat stress exposure, the hens were exposed to the normal ambient temperature of the season (20–26 °C) and 60–65% relative humidity. The second group was exposed to the ambient temperatures and relative humidity of the season (control). Data were collected during the period from 57 to 61 weeks of age.*

*Results indicated that, hen day egg production, egg weight and egg mass of heat stressed hens were significantly lower, during and one-week after the heat stress exposure, than the control ones. Feed consumption was significantly lower; feed efficiency was worse and mortality rate was higher, during the week of heat stress. Heat stressed hens produced eggs with less shell thickness and inferior interior quality (Haugh Unit and yolk color scores), as compared to the control ones.*

*Increasing birds' density, more than 5 hens per cage, resulted in significant negative effects on productive performances and yolk color scores, as compared to the lower cage densities.*

*Housing birds at low cage densities (4 or 5 hens per cage) improved ability of hens to alleviate the deleterious effects of heat stress on productive performances and egg quality. No significant detrimental effects, due to heat stress, on hen day egg production, egg weight, egg mass, feed conversion or Haugh Unit scores, were observed, when hens were caged at 4 or 5 hens per cage. Moreover, hens housed at 4 per cage were the most profitable, followed by 5 birds per cage.*

## INHERITANCE OF BODY WEIGHT, GROWTH RATE AND SOME FITNESS TRAITS IN JAPANESE QUAIL

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**Abstract:** *A total of 480 males and 480 females derived by randomly mating of 61 sires with 122 dams in one hatch were used to estimate the heritability, genetic and phenotypic correlations of body weights (BW) growth rates (GR) during different periods of growth and fitness traits to determine the best effective selection criteria for future genetic improving in Japanese quail.*

**The following results were obtained:** *Females were significantly ( $P=0.001$ ) heavier than males at 28,35 and 42 days of age. The differences between sexes were 2.64, 4.92, 6.45 and 10.87g at 21, 28, 35 and 42 days of age, respectively. Similar trends of significant sex effects favoring females were found for growth rate during the periods from 1-21, 22-42 and 1-42 days of age (171.6, 63.6 and 182.7% for females vs 171.2, 60.9 and 182.1% for males, respectively). Generally, BW' heritability estimates showed a wider range of variability than GR regardless of sex or method of estimation (0.02 to 0.95 vs 0.01 to 0.71, respectively). GR for male's progeny during all periods of growth had similar trend to BW which had higher dam component heritability ( $h^2_D$ ) than sire component heritability ( $h^2_S$ ) due to non-additive effects. Fertility% was influenced by sex-linked effects due to higher  $h^2_S$  than their corresponding  $h^2_D$  estimates. Heritability estimates of hatchability and survivability had higher  $h^2_D$  than  $h^2_S$  estimates, which may be due to maternal effects. All phenotypic and genetic correlation estimates between weights at different ages were positive with the magnitude generally decreasing as the interval between weighings increased. Phenotypically, either  $GR_{1-21}$  or  $GR_{1-42}$  in males and females were positively correlated with BW at different ages except at hatching day ranging from 0.33 to 0.75 and 0.02 to 0.38. Most of genetic correlations among GR separated by several days were high. Therefore, either  $BW_{42}$  or  $GR_{1-42}$  can be used as criteria of selection to improve growth performance of Japanese quail since they had considerably*

*higher heritabilities and genetic correlations with other traits of growth and lower standard errors than others.*

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## **EFFECT OF SELECTION FOR 8-WEEK BODY WEIGHT OF MALE BROILER PARENTS ON THE PERFORMANCE AND GENETIC PARAMETERS OF THEIR PROGENY**

**By**

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**Abstract:** *A total number of 2000 commercial Arbor Acres (AA) males were divided to 4 quarterly equal groups according to their 8-week body weight (BW) in a descending order. The first group contained the heaviest 25% males and so on. At 32 weeks of age, 8 males from each group (a total of 32 males) were selected and mated, at random, to AA females. Estimates of genetic parameters were calculated based on sire variance component. Production performances of 800 broiler progeny (25 chicks/sire) were obtained to study the efficiency of selecting male parents on the performance of their offspring. The progeny of the heaviest 25% males group were the heaviest in BW, at 3, 5 and 7 weeks, but not significantly different from the second heaviest 25% males group. The progeny of the heaviest 25% males group also had the best cumulative feed conversion. The same trend was observed for body measurements (keel length, body circumference and shank length) at 4 and 7 weeks and carcass characteristics (abdominal fat %, giblet % and dressing %) at 7 weeks. At all ages, the mean sire BW breeding values for the heaviest 50% males groups were positive, while they were negative for the lightest 50% males groups. Heritabilities which were estimated for BW, body measurements and carcass characteristics were the highest for the heaviest 25% males group, and the lowest for the lightest 25% males group. Genetic correlation ( $r_G$ ) estimates for BW at 3, 5 and 7 weeks of age were positive. The highest  $r_G$  values were those of the heaviest 50% males groups. The heaviest males group had the highest  $r_G$  among BW at 4 and 7 weeks and body measurements. The  $r_G$  estimates between BW at 7 weeks and carcass characteristics were positive and it was the highest with abdominal fat percentage. In conclusion, at least the lightest 25% of the male parents, at 8*

*weeks of age, should be culled to have a significant improvement in the production performances and genetic estimates of their offspring.*

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## **INFLUENCE OF NAKED NECK, FRIZZLE, CREST GENES AND THEIR TRIPLE SEGREGATION ON PRODUCTIVITY OF LAYER CHICKENS UNDER HOT ENVIRONMENTAL CONDITIONS**

**By**

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**Abstract:** *This experiment was conducted to compare the effects of naked neck (Na), frizzle (F) and crest (Cr) genes in a single manner or in a triple segregation case on laying performance and egg quality traits under summer season conditions of Egypt. Five genotypes including; normal (nanaffcrrc), naked neck (Nanaffcrrc), frizzle (nanaFfrcr), crest (nanaffCrrc) and naked neck frizzle crest (NanaFfCrrc) were evaluated in this trial. The main results can be summarized as follows:*

- ? *According to the lower ambient temperature during the growing period. Hens carrying crest gene had a heavier body weight at sexual maturity as compared to the other genotypes.*
- ? *It is noteworthy that both crested and triple segregation hens reached sexual maturity later than the other genotypes and the differences among all genotypes were highly significant.*
- ? *The existence of Na, F and Cr genes in a triple state increased egg weight compared to the others. This increment may attribute to additive gene effect or complementary gene effect.*
- ? *Both naked neck and frizzle genotypes had a heavier egg mass, higher egg number and higher intensity of laying as compared to other genetic groups. The triple segregation genotype recorded the lowest values of such traits.*

- ? *From economical point of view , all hens carrying Na, F and Cr genes in a single or combined manner not only decreased the broken eggs compared to the normal type hens but also increased the breaking strength of eggshells.*
- ? *Introducing Na, F and Cr genes into birds (triple segregation genes) significantly increased albumen %, albumen height and Haugh units when compared with other genotypes. Also, the triple segregation hens recorded the heaviest shell weight as compared to the remaining genotypes.*
- ? *In all genotypes, there was a significantly positive and strong correlation between egg weight and either long or short axes of eggs. The previous relationship was more pronounced in case of triple segregation genotype rather than single genes.*

*In conclusion, incorporating either Na or F gene in a single manner increased some productive traits such as egg mass, egg number, shell thickness and breaking strength. Hens carrying the three alleles had a benefit effect on egg weight, albumen %, albumen height and Haugh units, but deterioration effect was observed on egg number, egg mass and age at sexual maturity.*

## EFFECT OF ADDING GARLIC WITH VINEGAR EXTRACT TO DRINKING WATER ON BROILER PRODUCTIVE AND PHYSIOLOGIC PERFORMANCE

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**Abstract:** *One day old broiler chicks (Fawbro) were used to study the effect of adding different level of garlic with vinegar extract to drinking water on body weight, feed consumption, weight gain, feed conversion ratio, growth rate, glucose, total protein, uric acid, cholesterol in blood plasma, dressing percent and the relative internal body organ to body weight.*

*Five treatments were carried out T<sub>0</sub>- T<sub>4</sub> during 35-56 day of age. M<sub>0</sub> control treatment (without adding garlic with vinegar extract to drinking water), M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub> adding garlic with vinegar extract to drinking water at level 0.1, 0.2, 0.3, 0.4% respectively.*

*The result revealed that there were a significant increased in body weight for M<sub>4</sub> at 5,6 weeks of age while at 7,8 weeks of age the significant increased for M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub> compared with M<sub>0</sub>. Total feed consumption at 5-8 weeks of age revealed a significant reduction for M<sub>4</sub> compared with M<sub>0</sub> meanwhile feed conversion ratio improved (significant reduction) for M<sub>2</sub>, M<sub>4</sub> at 6-7 weeks and for M<sub>4</sub> at 7-8 weeks of age and for M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub> at 5-8 weeks of age compared with M<sub>0</sub>, meanwhile plasma glucose reduced at 6,8 weeks of age for M<sub>2</sub>, M<sub>4</sub> also cholesterol reduced significantly for M<sub>4</sub> treatment at 6 week of age while at 8 week of age the reduction for treatments M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub> compared with M<sub>0</sub>.*

*Heart-weight percentage increased significantly for treatment M<sub>4</sub> also gizzard weight percentage increased for M<sub>1</sub>, M<sub>2</sub> and abdominal fat percentage decreased for M<sub>3</sub>, M<sub>4</sub> compared with M<sub>0</sub>.*

*In general the result obtained confirmed that there were an improvement in most characters we study and adding garlic and vinegar extract with drinking water to broiler was important and need more study.*