# Some Biochemical and Bacteriological Studies On Mortality in Newly Born Rabbits

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## ABSTRACT

Sixty swabs from freshly dead rabbits 3-4 week old (20 cloacae, 20 mouth and 20 nasals) were collected for bacteriological examination. Out of 60 examined samples 33 (55%) were positive for bacteria distributed (16 cloacae, 5 mouth and 12 nasal) in single 28.33% (17) and mixed 26.67 (16) isolates, the main isolated bacteria was E. coli. Antibiogram study revealed that amoxicillin was the most effective drug antibiotic against isolated E. coli. A total of 60 healthy balady rabbits, 3-4 week old proved that free from E. coli infection were divided into 4 equal groups (15 each), 1st group healthy rabbits kept as control group, 2nd group healthy rabbits treated with 25mg amoxicillin/kg b.wt once daily for 5 consecutive days in drinking water, 3rd and 4th group were experimentally infected with E.coli was done at 21th day, 3rd group was infected rabbits non treated and 4th group infected rabbits treated with 25mg amoxicillin/kg b.wt once daily for 5 consecutive days in drinking water. Clinical signs and mortality rate, body weight gain and feed conversion rate, were recorded. Effect of Amoxicillin and infection in leukogram and biochemical parameters was studied. Amoxicillin residue in breast muscle, liver and kidneys were detected.

Infected rabbits with E. coli showed clinical sign such as depression, weakness, illness, dullness, sneezing, off food, rough fur, and diarrhoea and 26.7% mortalities.

Healthy rabbits treated with 25mg amoxicillin / kg bwt. displayed a significant increase in body weight gain, aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, gamma glutamyl transferase, urea and creatinine beside decrease feed conversion rate, insignificant increase in leukocytes, neutrophils, basophils, eosinophils, monocytes, lymphocytes and albumin /globulin ratio beside insignificant increase in total protein, albumin and globulin

Infected rabbits with E coli showed significant decrease in weight gain, neutrophils, total protein, albumin and globulin beside significant increase in feed conversion rate, leukocytic count, lymphocyte monocyte, aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, gamma glutamyl transferase, urea and creatinine coupled with insignificant increase basophils and eosinophils.

Amoxicillin residues in breast muscle, liver and kidney in both healthy and diseased rabbits were high at 1st day of clearance period and completely disappeared at 7th days of clearance period. High amoxicillin residue was found in kidney followed by liver and lowest residues were detected in breast muscle.

It could concluded that, E. coli infection in rabbits resulted in adverse effect in body weight, hemato-biochemical parameters, amoxicillin treatment rabbits improved these parameters.

## INTRODUCTION

Rabbits considered as a good source of dietatary protein for human *(1)*. Rabbits meat contains a high protein *(2)*. Rabbits have a better productivity of meat and fur *(3)*. Diseases affected young rabbits cause great losses of

rabbits *(4)*. Newly borne rabbit was reliable to a variety of disease *(5)*.

Infectious diseases in broiler chickens as enteritis causing early death *(6)*. Enterititis and diarrhoea is the most important diseases in weaning rabbits *(7)*. Bacterial diarrhea in rabbits cause high mortality rate during 3-8 weeks of age *(8,9)*. In rabbits E coli and salmenella spp.cause diarrhea and early mortality *(10,11)*.

Amoxicillin is one of most effective Beta lactam antibiotic widely used in veterinary medicine because of its broad spectrum antimicrobial activity, good absorption, penetration into tissues and rapid bactericidal activity *(12)*. Amoxicillin is a semisynthetic penicillin bactericidal activity against wide range of bacteria *(13)*.

The aims of the present study was isolate and identify bacterial causes of mortality in newly born rabbits, study the effects of isolated bacteria on body performance, leukogram some biochemical parameters effects with trail of treatment as well as determine residue of antibiotic amoxicillin.

## MATERIALS AND METHODS

### Isolation and identification

A total of 60 swabs from freshly dead rabbits (20 cloacae, 20 mouth and 20 nasals) 3-4 week old were collected from different localities at Sharkia Provence. All swabs were collected aseptically and inoculated into nutrient broth aerobically at $37^0$C over night, subcultured on nutrient agar and Mac Conkey agar plates was performed and incubated for 24h at $37^0$C *(14)*

### Antibiotic sensitivity test (In vitro)

Susceptibility of isolated E. coli to different chemotherapeutic agents was tested by disc diffusion method *(15)*.

### Drugs

Amoxicillin: It is a water soluble powder of semisynthetic broad spectrum penicillin (Pfizer Pharmaceutical Comp.). Its therapeutic dose 25mg/kg b. wt once daily for 5 consecutive days orally or intramuscularly *(16)*.

### Experimental Rabbits

Sixty balady rabbits, 3-4 week old, weighting 700-750gm were housed in wire cages under hygienic condition. Rabbits were fed a balanced ration free from any medications and given water ad-libitum. Swabs were tacken from all rabbits for bacteriological examination *(14)* to prove its free from E. coli infection.

### Microorganisms

Isolated E.coli from freshly dead rabbits **was** identified and serotyped as $O_{78}$*(17)* and used for infection of experimental rabbits.

### E. coli infection

Broth culture was standardized to give bacterial suspension containing ($3x10^9$ CFU) viable organism/ml of E.coli O78 using MacFerland tube. At 21 day of age each rabbits in 3rd and 4th group were given 0.3 ml via mouth route *(18)*.

### Experimental design

Rabbits were divided into 4 equal groups (15 in each), (1st and 2nd groups healthy non infected – 3rd and 4th groups experimentally infected with E. coli) 1st group healthy rabbits kept as control group, 2nd group healthy rabbits received 25mg amoxicillin /kg B.wt in drinking water once daily for 5 consecutive days, 3rd group infected rabbits not treated and 4th group includled infected rabbits treated with amoxicillin in same dose and period (as in 2nd group). Treatment started after 2 days from infection (appearance of clinical signs of the diseas should be recorded)

### Body weight

From each group 5 rabbit were weighted individually at the start of the experiment and at 1st day post treatment and consumed diets were recorded for calculation of weight gain and feed conversion rate.

### Sampling

At 1st and 7th days post treatment two blood samples were taken from ear vien, 1st sample

was taken in tube contain EDTA for estimating leukogram *(19)*. 2nd sample was taken in centrifuge tube for obtain clear serum for estimating total protein *(20)*, albumin aminotransferase *(21)*, globulin was calculated as difference between total protein and albumin, aspartate aminotransferase and alanine aminotransferase *(22)* alkaline phosphatase *(23)*, gamma glutamyl transferase *(24)*, urea *(25)* creatinine *(26)*.

Media

MacConky's agar, nutrient agar, MacConky's broth and Nutrient broth

Re-isolation E.coli

Sterilized cloacal and nasal swabs were taken from all rabbit post treatment. These swabs were incubated in nutrient broth at 37°C for 24h. then subcltured into nutrient agar and MacConkey agar plates for24h at 37°C *(27)*. suspected colonies were identified *(14-28)*.

Drug residue

Three rabbits from groups 3 and 4 were slaughtered at 1st,3rd & 7th day post treatment. Samples were collected from breast muscles, liver and kidneys for detecte amoxicillin residues *(29)*.

Preparation of medium and test plates

Per 100ml of agen antibiotic medium at 48°C ,1ml of micrococcus spore suspention ($10^7$spore/ml) was added to obtain adensity of $10^4$ spore/ml.The medium was shaked well and 13 ml of prepared medium was poored into a number of petridish (1cm depth).The plates were left at roome temperture on horizontal surface tell complete solidification, then 6 pores were made on each plate using strile borer with an outside diameter 8mm.

Procedure

Two plate were spilled with different concentration of antibiotic, then plates were incubated at $3^0$c for 24 hrs. The width of inhibition zone were recorded then a curve poltted between the concentration of antibiotic and the width of inhibition zone.The same procedure was done for rabbits tissues and the concentration of antibiotic was determined by comparing with those obtained by calibration curve.

Statistical analysis

Data obtained was tabulated and statistically analyzed *(30)*.

## RESULT AND DISCUSSION

Bacteriological examination of collected swabs from dead rabbits revealed that the presence of bacteria were 33 (55%) distributed as single 17 (28.3%) and mixed 16 (26.67%) infection and the main prominent isolated bacteria was E.coli (table 1 and 2). Our data are in accordance with *(31)* who isolate E. coli from dead newly borne rabbits and *(32)* found that main isolated bacteria were E.coli from diarrheic rabbits in young age.

Antibiogram revealed that E. coli was sensetive to amoxicillin fllowed by Spictinomycin, Streptomycin but not Oxytetracyclin. This obtained result was supported by *(33)* who found that amoxicillin is active against E. coli. Moreover *(34)* stated that sensitivity of isolates E. coli demonstrated greater sensitivity to amoxicillin.

Present study revealed that rabbits infected with E. coli showed clinical sign such as depression, weakness, illness, dullness, sneezing, off food, rough fur and diarrhea and mortality was 26.7%. Our results were agreed with *(35)* in newly born rabbits infected with E. coli. Same mortality rate in newly borne rabbit infected with E. coli was recorded *(36)*. Treatment infected rabbits with amoxicillin induced reduce clinical signs, improved health status of rabbits and reduced mortality to 6.67%. Similar result was recorded *(37)* stated that treatment of broiler chicks infected with E. coli by ß-lactamines drug led to disappear clinical signs and reduced mortality rate. Same results were recorded *(28)* stated that E.coli is susceptible to amoxicillin *(28)*.

The obtained results revealed that, healthy rabbits treated with amoxicillin and infected

rabbits non treated displayed a significant increase in body weight gain and decrease feed conversion rate but E coli infection induce significant decrease in body weight gain and feed conversion rate. Reduction in body weight in infected rabbits may be due to the deleterious effect of the microorganism which invaded the host and retarded its metabolic activity and decreased absorption of nutrients from the inflamed alimentary tract *(4)*. Our results were in harmony with those obtained *(35)* in rabbits infected with E. coli and *(38)* in chickens infection with E. coli. Increase in body weight gain and improvement in feed conversion rate in healthy and E. coli infected rabbits medication with amoxicillin displayed a significant these results may be due to antimicrobial effect of the drug which consequently improved metabolic activity of the birds. Our results were supported by those recorded *(39)*, who illustrated that, antimicrobials when used in a very small amounts produce an increase in growth rate and reduce mortality in growing rabbits.

Data in Table (6) represents in significant increase in leukocytic count, neutrophils, basophils, eosinophils, monocytes and lymphocytes in healthy rabbits treated with amoxicillin. Infected rabbits with E coli showed significant leukocytosis,lymphocytosis, monocytosis , neutropenia and insignificant increase in basophile and eosinophile. Same observation was recorded *(40)* in healthy rabbit treated with amoxicillin and *(41)* in health broiler chickens treated with amoxicillin. Our results are compatible with *(42)* in rabbit infected with E. coli. Bacterial infection induced significant leukocytosis *(4)*. Change in leukogram in E. coli infected rabbits may be due to inflammatory response in gastrointestinal tract due to bacterial infection *(43)*.

Our findings revealed that healthy rabbits received amoxicillin elicited in significant elevation of total protein; albumin and globulin but infected rabbits with E. coli elicited a significant decrease in total protein, albumin and globulin table (7). Same change in protein picture was recorded *(40)* in healthy rabbit treated with amoxicillin and *(44)* in healthy rabbits treated with other ß-lactamines cefoperazone. Our findings are agreed with recorded *(45,46)* in rabbits infected with E. coli. Decrease in albumin observed in serum of rabbits infected with E. coli could be due to liver damage in which liver is the sole site of albumin synthesis *(47)*. Changes in protein picture may be due to a state of anorexia and inability of synthesis proteins *(48)* and destructive effect on the intestinal villi by infected bacteria which lead to mal absorption *(49)*.

The present study indicated that aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, gamma glutamyl transferase, urea and creatinine levels were significantly elevated in both healthy and treated with amoxicillin and *E. coli* infected rabbits. These results were go in agreement *(40)* in healthy rabbit treated with amoxicillin and *(50)* reported ß-lactamines cefoperazone increased blood urea and creatinine. Amoxicillin induced increase in serum urea *(51)*. Another beta lactam (ceftriaxone) causes hepatotoxicity and elevation in aspartate aminotransferase, alanine aminotransferase and alkaline phosphatase *(52)*. Elevation in liver enzymes, urea and creatinine in rabbit received amoxicillin may be due to hepatorenal toxicity induced by used drugs *(53)*. Increased creatinine in infected birds with E. coli could be attributed to the degenerative changes in the kidney tubules *(47)*. Endotoxins of E.coli induce elevation of serum creatinine in rat *(54)*.

Our results coincides *(41-55)* who concluded that administration of amoxicillin or another beta lactam antibiotics (cephalosporin) improved the adverse effects of E.coli infection on haematological parameters after $7^{th}$ days post treatment.

Amoxicillin residues in liver, kidney and breast muscle in both healthy and diseased rabbits were high at $1^{st}$ day of clearance period and completely disappeared at $7^{th}$ days of clearance period. High amoxicillin residue was found in kidney followed by liver and lowest in breast muscle. Same result was reported *(53)* found amoxicillin was detected for 4 days of

clearance period in kidney and 2 day in liver and breast muscles. The obtained results coincide with *(56)* in broilers. No residues could be detected after 8hs of clearance period *(13)*.The public health significant affections by antibiotic residues in meat may brings public attention to their detrimental consequences as toxicology, allergy, immunology *(57)*, anaphylactic shock *(58)* as well as the development of resistant bacterial strains to antibiotics *(69)*

From this study we concluded that, E. coli infection in rabbits resulted in adverse effect in body weight, leukogram and some biochemical parameters, amoxicillin treatment rabbits improved these parameters.

**Table 1. Prevalence of bacterial isolates from swabs of dead balady rabbits**

| Swabs | No. of examined swabes | Single isolates | | Mixed isolates | | Total positive | |
|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % |
| cloacae | 20 | 10 | 50 | 6 | 30 | 16 | 80 |
| mouth | 20 | 2 | 10 | 3 | 15 | 5 | 25 |
| nasal | 20 | 5 | 25 | 7 | 35 | 12 | 60 |
| total | 60 | 17 | 28.33 | 16 | 26.67 | 33 | 55 |

**Table 2. Incidence and causes of dead balady rabbits**

| Total of isolent | Single Insolent | | | | Mixed insolent | | | |
|---|---|---|---|---|---|---|---|---|
| | No | Insolent | No | % | No | Insolent | No | % |
| Cloacae | 10 | E.coli | 6 | 60 | 6 | E.coli+ staph aureus | 4 | 66.67 |
| (16) | | salmonella spp | 1 | 10 | | E.coli + strept. spp. | 2 | 33.33 |
| | | Strept. spp. | 3 | 30 | | | | |
| Mouth | 2 | E.coli | 1 | 50 | 3 | E. Coli + staph. Spp. | 3 | 100 |
| (5) | | Staph. spp | 1 | 50 | | | | |
| Nasal | 5 | Past. Milt. | 2 | 40 | 7 | E. coli + Past. Milt. | 4 | 57.14 |
| (12) | | Staph. spp | 1 | 20 | | E. coli+ strept. Spp. | 3 | 42.86 |
| | | E. Coli | 2 | 40 | | | | |

Past Milt. =Pasteurella Miltocida strept. spp. = streptococci spp.

**Table3. In-vitro susceptibility of E. coli to antimacterial agents by disc diffusion method.**

| Drug | Potency of disc (µg) | Mean Zone of Inhibition (mm) |
|---|---|---|
| Amoxicillin | AMC 30 | 1.9 |
| Spictinomycin | SP 100 | 1.5 |
| Streptomycin | SM30 | 1.5 |
| Enrofloxacin | EN10 | 1.5 |
| Refampicin | RD 5 | 1.1 |
| Doxycycline | Do 30 | - ve |
| Erythromycin | EM30 | - ve |
| Oxytetracyclin | OT30 | - ve |

**Table 4. Mortality rate and Re-isolation rate of E. coli (O78) post treatment E coli in rabbits**

| Groups | | Examined rabbits Total | Mortality rate | | Re-isolation rate of E. coli (O78) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Cloacal swab | | Nasal exudate | |
| | | | No | % | No | % | No | % |
| Healthy control | | 15 | 00 | 00 | 00 | 00 | 00 | 00 |
| Healthy treated | | 15 | 00 | 00 | 00 | 00 | 00 | 00 |
| Diseased | Non treated | 15 | 4 | 26.7 | 13 | 86.67 | 11 | 73.33 |
| | treated | 15 | 1 | 6.67 | 4 | 26.67 | 3 | 20 |

**Table 5. Body performance of healthy and diseased rabbits (Mean ± S.E.)**

| Parameter | Healthy control | Healthy treated | Diseased rabbit | |
|---|---|---|---|---|
| | | | Non treated | treated |
| Ineasial B.W(gm) | 735.03±3.24 | 725.48±2.98 | 720.59±2.13 | 727.69±3.06 |
| Weight at 1stday pt (gm) | 783.74±4.52 | 784.03±3.06 | 760.41±6.47** | 775.40±4.70 |
| BWG (gm) | 48.71±2.47 | 58.55±3.32* | 39.82±2.51* | 47.71±2.30 |
| FC (gm/rabbit) | 103.06 | 115.10 | 97.07 | 101.12 |
| feed conversion rate | 2.11 | 1.96 | 2.44 | 2.12 |

*** Significant at P < 0.001 pt=post treatment BWG= body weight gain
FC = feed consumption FCR = feed conversion rate

**Table 6. Lukogram profile in healthy and diseased rabbits (Mean ± S.E.)**

| Parameter | | Healthy control | Healthy treated | Diseased rabbit | | |
|---|---|---|---|---|---|---|
| | | | | Non treated | Treated | |
| | | | | | 1st day | 7th day |
| TWCs (103/cmm) | | 12.73±0.55 | 13.57±0.67 | 14.43±0.34* | 13.94±0.11* | 12.52±0.62 |
| Differential leukocytic count 103/cmm) | Lymphocytes | 6.31±0.15 | 6.54±0.51 | 6.85±0.19* | 6.38±0.24 | 6.33±0.60 |
| | Neutrophils | 5.20±0.06 | 5.36±0.12 | 4.97±0.04 | 4.88±0.10* | 4.22±0.19 |
| | Eosinophils | 0.19± 0.02 | 0.26± 0.04 | 0.71±0.15 | 0.55±0.14 | 0.50±0.12 |
| | Basophils | 0.25± 0.06 | 0.41± 0.09 | 0.54± 0.12 | 0.49± 0.13 | 0.36± 0.08 |
| | Monocytes | 0.78±0.10 | 0.92±0.12 | 1.36±0.18* | 1.24±0.15* | 1.11±0.21 |

*Significant at P ≤ 0.05 ** Significant at P ≤ 0.01

**Table 7. Some biochemical parameters in the serum of healthy and diseased rabbits(Mean ± S.E.)**

| Parameter | | Healthy control | Healthy treated | Diseased rabbit | | |
|---|---|---|---|---|---|---|
| | | | | Non treated | Treated | |
| | | | | | 1st day | 7th day |
| Protein profile (mg/dl) | T. protein | 6.23±0.25 | 6.98±0.73 | 4.91±0.34* | 5.57±0.11* | 6.14±1.13 |
| | Albumen | 3.83±0.12 | 4.12±0.34 | 3.00±0.24* | 3.49±0.09* | 3.78±0.20 |
| | globulin | 2.40±0.11 | 3.86±0.28 | 1.83±0.22* | 2.08±0.10* | 2.36 ±0.15 |
| | A/G ratio | 1.60±0.02 | 1.44±0.21 | 1.69±0.03* | 1.68±0.02* | 1.60±0.09 |
| Liver enzymes (U/L) | AST | 30.50±1.58 | 34.26±0.85* | 35.24±1.06* | 33.84±1.76 | 30.04±1.42 |
| | ALT | 39.84±1.34 | 43.73±0.62* | 44.59±1.42* | 41.05±1.83 | 39.98±1.72 |
| | ALP | 22.80±1.28 | 26.33±0.41* | 28.46±1.40* | 25.11±1.96 | 22.90±1.44 |
| | GGT | 28.35±0.59 | 31.05±0.68* | 34.13±1.86* | 31.68±1.84 | 29.06±1.54 |
| Kidney Function (mg/dl) | Urea | 22.28±0.39 | 23.74±0.48* | 24.04±0.48* | 23.30±0.62 | 22.89±0.74 |
| | Creatinine | 1.21±0.32 | 2.45±0.34* | 2.90±0.61* | 2.07±0.53 | 1.44±0.35 |

**Table 8. amoxicillin residues (µg/gm) in rabbits tissues.(n=3)**

| Days post treatment | Healthy rabbits amoxicillin treated | | | Diseased rabbits amoxicillin treated | | |
|---|---|---|---|---|---|---|
| | Liver | Kidney | Breast muscle | Liver | Kidney | Breast muscle |
| 1 | 1.20±0.22 | 4.84±0.38 | 0.98±0.18 | 1.29±0.17 | 4.58±0.74 | 1.07±0.20 |
| 3 | 0.54±0.06 | 0.62±0.10 | 0.37±0.08 | 0.67±0.12 | 0.57±0.06 | 0.47 ± 0.12 |
| 7 | 00 | 00 | 00 | 00 | 00 | 00 |

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## الملخص العربى

## بعض الدراسات البيوكيميائيه والبكتريولوجيه على النفوق في الارانب حديثه الولاده

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تم تجميع مسحات شرجيه من ٦٠ ارنب نافق حديث عمرها من ٣ - ٤ اسبوع من اماكن مختلفه بمحافظه الشرقيه ( ٢٠ مسحه من فتحه المجمع – ٢٠ مسحه من الفم – ٢٠ مسحه من الانف) للفحص البكتريولوجي لعزل البكتيريا المسببه للاسهال فى الارانب. وبعد الفحص البكتيريولوجى وجد ان ٣٣ ارنب بنسبه (٥٥%) بها بكتيريا موزعه ( ١٦من فتحه المجمع – ٥ من الفم – ١٢ من الانف) وعدد ١٧ (٢٨,٣٣% معزولات منفرده وعدد ١٦ (٢٦,٦٧%) معزولات مشتركه. وبعمل اختبار حساسيه لتلك المعزولات وجد ان الاميكوسللين هو المؤثر على تلك المعزولات. تم اجراء البحث على عدد ٦٠ ارنب يتراوح عمرها من ٣ - ٤ اسبوع بصحه جيده ولاتعانى من اى اعراض مرضيه وتم تقسيمهم الى ٤ مجموعات كلا منها يحتوى على ١٥ ارانب (المجموعه الاولى والثانيه ارانب سليمه بينما المجموعه الثالثه والرابعه تم عمل عدوى اصطناعيه بالميكروب القولونى العصوى) . المجموعة الأولى أرانب سليمة ظاهريا واكلينكيا ولم تعالج باى أدوية(مجموعة ضابطة). المجموعة الثانية أرانب سليمة ظاهريا وتم اعطائها ٢٥ مجم من الاميكوسللين /كجم من وزن الجسم لمده ٥ يوم عن طريق مياه الشرب لمدة خمس أيام متتالية. المجموعة الثالثه ارانب مصابه بالميكروب القولونى العصوى ولم تعالج اما المجموعة الرابعه ارانب مصابه بالميكروب القولونى العصوى وتم علاجها باستخدام ٢٥ مجمالاميكوسللي/كجم من وزن الجسم لمده ٥ يوم عن طريق مياه الشرب لمدة خمس أيام متتالية. تم دراسة تاثير الاصابه بالميكروب القولونى العصوى والعلاج فى الأرانب على معدل النمو ومعدل التحويل الغذائي. تم جمع عينات دم من كل الارانب قبل العلاج وبعده بفترات مختلفة لقياس بعض الوظائف المناعيه( صوره كرات الدم البيضاء – صوره البروتين - وظائف كبد وكلى). يتم اخذ عينات من الكبد والكلى لتعيين بقايا الاموكسى سللين.

الإصابة بالميكروب القولونى العصوى في الارانب ادت إلى ظهور أعراض مرضية وأدت إلى زيادة نسبة الوفيات الى (٢٦,٧%) .

تشير نتائج الدراسة أن الارانب السليمه والمعالجه بالاميكوسللين أدت إلى وجود زيادة معنوية في وزن الجسم المكتسب، انزيمات الكبد (ALT-AST، ALP، GGT)،اليوريا والكرياتين ونقص معنوي في معدل التحويل الغذائى ونقص غير معنوى فى عدد كرات الدم البيضاء،الخلايا المتعادله، الخلايا الحامضيه، والخلايا القاعديه والملنهمه الكبيره والخلايا الليمفاويه البروتين الكلى، الجلوبيولين الزلال .

الإصابة بالميكروب القولونى العصوى في الارانب أدت إلى وجود نقص معنوي فى وزن الجسم المكتسب، الخلايا المتعادله البروتين الكلى، الجلوبيولين الزلال بجانب زياده معنويه فى معدل التحويل الغذائى عدد كرات الدم البيضاء،الخلايا المتعادله، والخلايا الليمفاويه والملنهمه الكبيره، انزيمات الكبد (ALT-AST، ALP، GGT)،اليوريا والكرياتين وزياده غير معنويه فى الخلايا الحامضيه والقاعديه. وقد أتضح من هذة الدرا سة أن عقار الاميكوسللين أدى إلى اختفاء الأعراض وقلل نسبة الوفيات وتحسنت الوظائف البيوكيميائية.

وقد دلت نتائج الدراسة على أن الاميكوسللين له بقايا في الأنسجة اثنا وبعد العلاج وكان أعلى منسوب لبقايا العقارين في الكلى يلهما الكبد ثم عضلات الصدر ، واقلها كان فى عضلات الصدر ولكن الاميكوسللين اختفي من الأنسجة بعد مرور ٧ يوم من نهايه إعطاء العقار.

من مجموع ما تقدم من نتائج البحث نستخلص أن الاصابة بالميكروب القولونى العصوى في الارانب تودي إلى حدوث تغيرات في بعض الوظائف البيوكيميائية ووجود بقايا فى الأنسجة لمدة ٧ يوم لذلك ينصح بعدم ذبح الارانب ألا بعد مرور ٧ يوم من العلاج بالاميكوسللين.