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## دراسات عن حدوث الالتهاب الشعبي الرئوي

في عجول التسمين الجاموسي

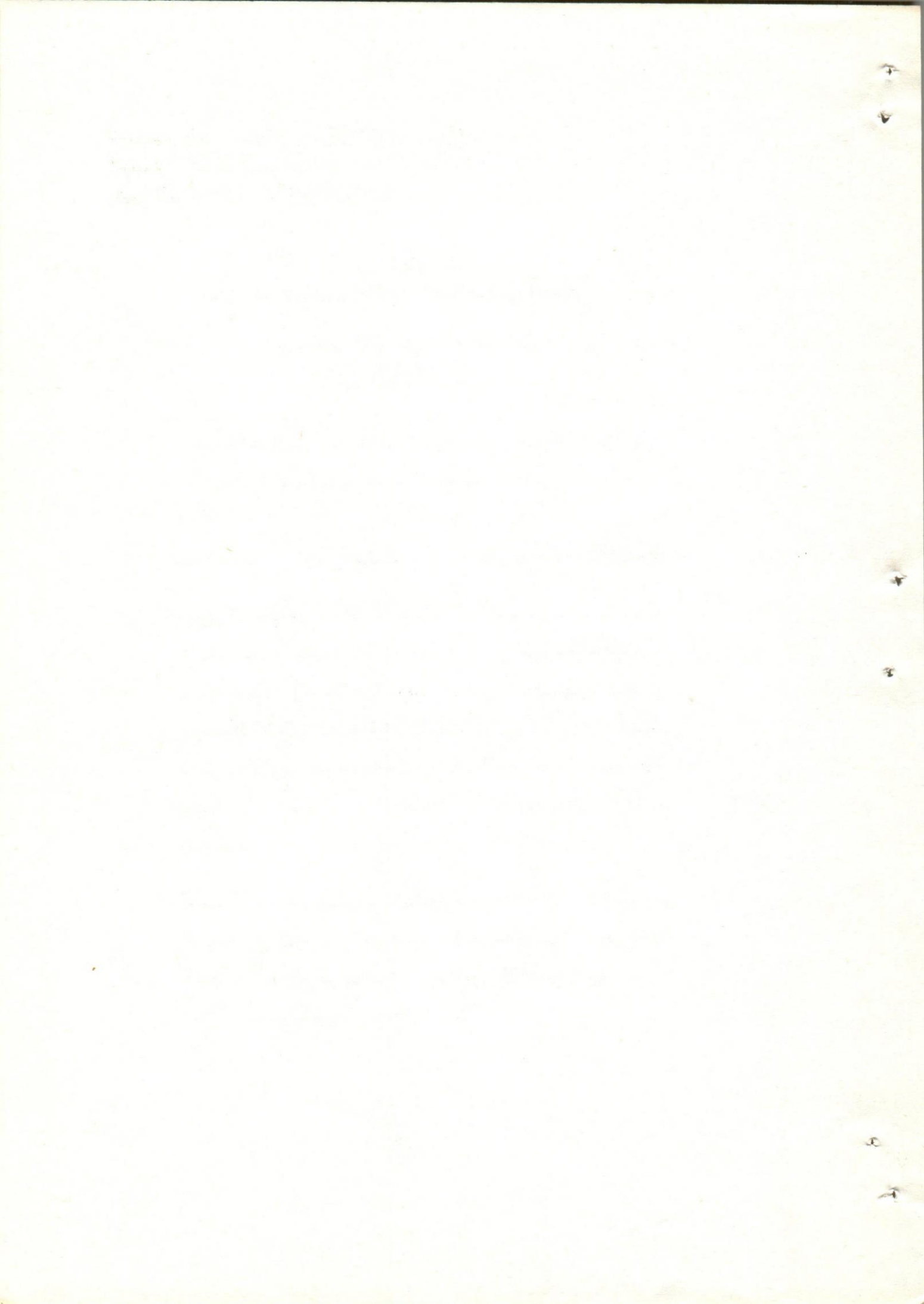
بمحافظة أسيوط

٣- التغيرات التي تحدث في أنزيمات الترانسامين والسكر  
وعناصر الصوديوم والبوتاسيوم والكلور

محمد سمير ، نور خضر ، مجدى حافظ

أجرى البحث في محافظة أسيوط على عدد ٤١ عجل  
جاموس يتراوح عمرها بين ٩ - ١٢ شهرا ومتوسط وزنها  
١٥٠ كجم . وقد قسمت الحيوانات الى ثلاث مجموعات .  
المجموعة الأولى شديدة الإصابة بالمرض وتشمل ٢١ عجل  
جاموس ، والمجموعة الثانية مصابة بالمرض إصابة بسيطة  
وتشمل ١٠ عجول ، أما المجموعة الثالثة (١٠ عجول) فأخذت  
كضوابط .

لوحظ زيادة في مستوى أنزيمات الـ GOT, GPT في  
الحيوانات المريضة ، نقص مستوى البوتاسيوم في السيرم نقصا  
طفيفا ، أما السكر وعنصرى الصوديوم والكلوريد فلم يحدث  
بها أى تغير ملحوظ .



**INVESTIGATION ON AN OUTBREAK OF ENZOOTIC BRONCHOPNEUMONIA  
IN FATTING BUFFALO CALVES IN ASSIUT A.R.E.**

**III. Changes in transaminases, glucose and some electrolyte  
(Na, K, Cl).**

(With Two Tables)

By

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**SUMMARY**

Forty one buffaloe calves 9-12 months of age and averaged 150 kg body-weight were included in this investigation. The investigated animals were divided into 3 groups. The first one (21 calves) suffered from severe respiratory distress while the second group (10 calves) were slightly affected. The rest (10 calves) served as control.

Serum transaminasis, glucose, sodium potassium and chloride were estimated in all investigated animals.

- There were a great increase in the serum GOT & GPT in the all affected animals.
- Serum K<sup>+</sup> was slightly decreased.
- Serum glucose, Na<sup>+</sup> and Cl were not affected and still within the normal accepted physiological level.

**INTRODUCTION**

Respiratory affection in fattening calves are widely spread throughout the world and causes great economic losses in cattle industry. The clinical picture in the different respiratory infections in calves are usually similar, yet the aetiological factors are complex. There are many stress factors lowering the resistance of the calves leading them liable to be infected with infectious agents. (Moustafa, *et al.* (1975).

Viruses, bacteria and viruses complicated with bacteria were the more pathogenic and severe agents mostly encountered in developing such morbid conditions. Viral causes which are incriminated in the incidence of enzootic pneumonia include Para influenza type 3 (PI), infectious bovine rhinotracheitis (I.B.R.) and Mucosal disease (M.D). (PIRIE, *et al.* 1981; EL-SEBAIE, *et al.* 1983). Affection with I.B.R. virus had been shown to predispose to bacterial pneumonia (LEH-MKUHL & GOUGH, 1977). *Pasteurella multocida* and *Haemorrhagica* are commonly isolated from cattle with respiratory disease (ALLEY, 1975; GILMOURI, 1978, BRYSON *et al.* 1979 and CHANDRASOKARAN and CHUINK, 1981).

A few reports on respiratory diseases in Egyptian fattening calves had been reported by MOUSTAFA *et al.* (1975) and EL-Allawy *et al.* (1979) and others... .

Clinical examination of 41 buffalo calves suffered from enzootic pneumonia, as well as, serological and bacteriological studies were previously examined by EL-SEBAIE *et al.* (1983). The author's stated that, the samples were seropositive for PI, IBR and MD. They also succeeded in isolation of *Pasteurella multocida* micro-organism from the nasal swabs, as well as, from the organs of outopsied calves.

In the present investigation we aimed to study the variations in serum transaminases (GPT & GOT) and in serum glucose that may occur in the diseased calves with enzootic pneumonia which were mentioned previously. Our study extended to show the change in some serum electrolytes (Na, K and Cl) that may occur in the affected animals.

#### MATERIAL and METHODS

Forty-one buffalo calves 9-12 months of age and an average 150 kg. body weight comprised this study. Twenty one of the investigated animals suffered severe respiratory distress (1<sup>st</sup> group). The second group (10 calves) were slightly affected. Calves of both groups were housed together. The rest of investigated animals (10) were clinically healthy showed no abnormal respiratory manifestations, and served as control (3<sup>rd</sup> group). In a previous study by EL-SEBAIE *et al.* (1983) the clinical examination was adopted to the affected animals, as well as nasal swabs, part of liver, spleen, kidneys, heart, and related lymph node of dead calves were examined bacteriologically and virologically.

Serum GOT, GPT and Glucose were estimated using test kits supplied by Boehringer Mannheim (W. Germany). Serum Na, and K were determined on the E.E.L. Flame-photometer. The chloride content of the serum was measured using the chloride-meter (CORNING. MODEL 925).

#### RESULTS

Serum GPT was increased from  $3.87 \pm 1.25$  u/l to  $5.69 \pm 2.02$  u/l in the severe affected animals, while in moderately affected calves the level amounted  $5.30 \pm 2.87$  u/l (Table I). Serum GOT was increased in the diseased calves from  $81.62 \pm 28.29$  to  $101.12 \pm$  u/l, however in moderately affected calves serum GOT was some what higher than that in the 1<sup>st</sup> group (Table I).

The level of serum Na and Cl were not affected in the diseased calves either in 1<sup>st</sup> or 2<sup>nd</sup> group. (Table II). On the other side K level was decreased from  $6.21 \pm 0.74$  to  $5.01 \pm 0.91$  m Eq/l in second group and from  $6.21 \pm 0.74$  to  $4.64 \pm 0.84$  m Eq/l in the 1<sup>st</sup> group (Table II).

#### DISCUSSION

Clinical examination of the affected animals, as well as serological examination & bacteriological studies were previously studied by EL-SEBAIE *et al.* (1983). The authors stated that, all the samples were seropositive for Para-influenza - 3 (PI), and some of the samples (II) were seropositive against Infections bovine rhinotracheitis (IBR). They added that, antibody titer of Mucosed disease (MD) was detected in 20 serum samples. Also the authors succeeded in isolation of *Pasteurella multocida* micro-organism from nasal swabs, as well as, from the organs of autopsied calves.

The rises in the level of transaminases as shown in table "I" may be due to the destruction of the lung tissues in the diseased animals. Also the increase in serum GPT denote hepatic involvement during the course of the disease (COLES, 1980). The obtained results were in agreement with that reported by AL-ALLAWY *et al.* (1979) and HASSAAN *et al.* (1983). In previous studies on the same material HASSAAN *et al.* (1983) recorded a decreased level of serum proteins, attributed these findings to the affection of bacterial and viral toxins on the hepatic pranchy-ma leading failure of liver functions.

## TRANSAMINASES, GLUCOSE and ELECTROLYTE

Serum glucose level as shown in table "I" was not changed and remained within the normal physiological level indicating that the pancreatic pranchyma was not affected in the diseased animal. The obtained results were in agreement with that reported by HASSAN (1980).

Na & Cl levels were not changed in diseased calves and still in the normal level as shown in table "II" The obtained results indicated that the renal tissue were not involved in the diseased animals. The gained result was in agreement with that reported by COLES (1980) who stated that, the level of serum Na, Cl were affected in case of renal disease.

Serum K level was slightly decreased in the diseased calves as shown in table II. The decrease in serum K level may be due to an increase in the pH of the blood of the diseased animals. COLES (1980) reported that, K level was decreased in case of increased blood pH. The changes in the pH of blood may be due to the action of bacterial & viral toxins.

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Table I

## Serum GPT, GOT and Glucose of Diseased And Healthy Calves

	Number of Animals	GPT u/l	GOT u/l	Glucose mg %
Group I	21	5.69 $\pm$ 2.02	101.12 $\pm$ 30.91	72.4 $\pm$ 0.45
Group II	10	5.30 $\pm$ 2.87	105.91 $\pm$ 33.80	69.8 $\pm$ 0.54
Group III	10	3.87 $\pm$ 1.25	81.62 $\pm$ 28.29	65.6 $\pm$ 0.72

Table II

## Serum Na, K and Cl of Diseased and Healthy Calves.

	Number of Animals	Serum Na mEq/l	Serum K mEq/l	Serum Cl mmol/l
Group I	21	135.41 $\pm$ 20.71	4.64 $\pm$ 0.84	97.15 $\pm$ 5.90
Group II	10	136.25 $\pm$ 24.02	5.01 $\pm$ 0.91	96.33 $\pm$ 2.40
Group III	10	131.0 $\pm$ 23.02	6.21 $\pm$ 0.74	99.80 $\pm$ 3.42