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دراسة عن التسمم العرضي بالملاثيون في النعاج

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تم دراسة أعراض التسمم بالملاثيون لعدد ١٤ نعجة - يتراوح أعمارها من ٢ - ٤ سنوات ممثلة في زيادة افراز اللعاب وفقدان الشهية وتأرجح الخطى والهباج العصبي عند حدوث أى ازعاج . وقد نفقت نعجتان قبل اعطاء العلاج . وأظهرت الصفة التشريحية لهم حدوث التهاب معوى للأغشية المخاطية للامعاء مع وجود بقع دموية في كافة الأغشية المخاطية .

أعطيت الحيوانات المصابة بالتسمم علاجاً يتكون من كبريتات الماغنسيوم ، ثم تم حقنها بالوريد والعضل بسلفات الأتروبين ومحلول الكال - دي - ماج لمدة ثلاثة أيام .

أوضحت التغيرات البيوكيميائية حدوث انخفاض معنوي في معدل البروتين الكلي والجلوبوبولين وكذلك الكالسيوم والماغنسيوم والجلوكوز في الحيوانات المصابة بالتسمم عنها في المعالجة . أما بالنسبة لمستوى الفسفور الغير عضوي فلم يتأثر .

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STUDIES ON ACCIDENTAL TOXICITY WITH MALATHION* IN EWES (With One Tables)

By
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SUMMARY

Signs of toxicity, including profuse salivation, diarrhoea, ataxia and tremors of the skeletal muscles have been observed in ewes, grazing at fruits garden previously sprayed by Cidial in concentration of 1%. Treatment trails were succeeded in recovery of 12 ewes while only two ewes were dead.

Post-mortem examination of the two dead ewes revealed mainly severe gastero-enteritis with ecchymotic and petechial haemorrhage on the serosal surfaces.

Biochemical analysis of blood serum revealed a marked decrease in total proteins, globulins, calcium, magnesium and glucose levels in poisoned ewes if compared with those after treatment.

INTRODUCTION

The organophosphorus insecticides are, in general, relatively absorbed by all routes (KHAN, 1973 and SOLLY, 1971). The rate of dermal absorption may be considerably influenced by the solvent used (KHAN, 1973 and SOLLY, 1971).

Clinical signs of organophosphorus compounds toxicity are due to over-stimulation of parasympathetic system due to accumulation of acetylcholine (GELDER, 1976). The stimulation of parasympathetic system may, leads to muscarinic or nicotinic and central action. Muscarinic action usually the first to be manifested. It is mainly consisted of hypersalivation, lachrymation, sweating, nasal discharge, myosis, dyspnoea, vomiting, diarrhoea and frequent urination also occurs. Nicotinic action includes fasciculation of the muscle, weakness and paralysis. Central action meanwhile includes nervousness, apprehension, ataxia, convulsions and coma (GELDER, 1976).

Similar clinical signs of organophosphorus toxicity in cattle were described by Gelder (1976), Choules (1977) and Mitema and Masha (1984).

There are no specific post-mortem lesions in case of poisoning by organophosphorus compounds. Such lesions-as have been described by KHAN (1973) and SOLLY (1971) -are haemorrhagic gastero-enteritis, pulmonary oedema with degenerative changes in liver and kidneys.

* : Malathion : The commerical name is cidial. Kafer El-Zayate Comp.

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Blood biochemical changes - produced by malathion toxicity- were studied by CUPTA (1974) in rats and by NETO (1963) in dogs. They reported an increase of blood sodium and decrease of potassium and calcium of dog and rats intoxicated with malathion.

A significant decrease in blood serum of both sodium and potassium levels in ewes intoxicated with organophosphorus compound " Nuvacron " was established by BAYOUMI et al. (1979).

The aim of this work was to throw light upon the clinical, some biochemical changes and line of treatment associated with accidental malathion toxicity in ewes.

MATERIAL and METHODS

In a breeding Farm at Assiut Governorate, a history of spraying of an acaricide solution (Cidial 1%) for three times was registered. Signs of accidental toxicity appeared on 14 ewes aging varied from 2 to 4 years. Two of them were found dead before applying treatment. Post-mortem examination was performed. Living ewes were treated with atropine sulphate at a dose rate 1 mg/Kg B.Wt. Half of the dose was given slowly intravenously. The remaining half was given intramuscularly. Cal-D-Mag. and normal saline (50 - 100 ml) were injected intravenously daily. Also antidiarrhoeal dose which consists from a mixture of (Sodium carbonate, tannic acid, charcoal, calcium carbonate and broadspectrum antibiotic as terramycin powder) were dosed orally to overcome diarrhoea.

Blood samples were drawn from animals within 3 hours from intoxication and at the third day after treatment. The obtained sera were analysed colourimetrically- using test* kits- for total proteins- gm% (WEICHELBAUM, 1946), albumin - gm % (DRUPT, 1974), Calcium - mg% (GINDLER and KING, 1972), magnesium -mg% (GINDER and HETH, 1971), phosphorus -mg% (MORINL and PROX, 1973) and glucose -mg% (TINDER, 1969).

The obtained data were statistically analysed after the method of SNEDECOR & COCHRAN (1967).

RESULTS

Clinical signs of toxicity appeared on affected ewes as anoroxia and recumbancy, with common hypersalivation. When animals were forced to move they exhibited an ataxic gait. All animals have had profuse diarrhoea of varied degree with clear signs of dehydration.

After treatment, salivation stopped and animals began to show more interest to their surroundings. Appetite returned gradually after treatment by 2 to 3 days.

Diarrhoea persisted 24 hours then stopped after treatment with antidiarrhoeal dose. By the end of the third day all ewes behaved clinically normal.

Post-mortem examination of two dead ewes revealed severe gastero-enteritis with ecchymotic and petechial haemorrhages on the serosal surfaces.

Mean values of biochemical analysis before and after treatment were mentioned in table (1).

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Table (1)

Mean Blood Serum Parameters in Examined Ewes

Groups	Total protein gm %	Albumin gm %	Globulin gm %	Calcium mg %	Phosphorus mg %	Magnesium mg %	Glucose mg %
Intoxicated	6.53+ 0.97	2.23+ 0.3	4.39+ 1.1	10.3+ 1.8	6.8+ 1.2	2.5+ 0.6	51.2+ 9.9
After treatment	7.7+** 0.4	2.27+ 0.6	5.33+** 0.8	12.1+* 1.8	6.5+ 1.4	3.2+* 0.7	67.5+** 14.9

* : Significant (P/___0.05)

** : Highly significant (P/___0.01)

DISCUSSION

Clinical signs of salivation, diarrhoea, ataxia and recumbancy, that have been observed in intoxicated ewes were coincided with those previously obtained by GELDER (1976); CHOULES (1977) and MITEMA and MASHA (1984) in a similar cases in cattle intoxicated with organophosphorus compounds.

These clinical signs can be attributed to over-stimulation of parasympathetic system due to accumulation of acetylcholine (KHAN, 1973 and SOLLY, 1971).

The post- mortem lesions revealed severe gastero-enteritis with ecchymotic and petechial haemorrhages on the serosal surface of the intestine. Similar lesions were previously stated by GELDER (1976) in cattle exposed to the same circumstances.

Marked significant (P/___0.01) decrease in the total proteins and globulins levels was evident in toxic group if compared with those after treatment. This decrease can be attributed to inappetance and poor absorption of dietary constituents from intestinal tract (COLES, 1980). Total serum proteins and globulins levels again returned to their normal levels after applying treatment.

Non-significant variations were observed between treated and intoxicated animals in the level of inorganic phosphorus. The obtained results coincided with those previously obtained by COLES (1980) and COFFIN (1953) in clinically healthy ewes which ranged from 2-5 to 9.0 mg%.

Serum samples collected after treatment showed that calcium, magnesium and glucose levels in treated ewes manifested a marked increase, if compared with the toxic ones. The amount of proteins in serum affects the bound calcium level but has a little effect on ionized calcium (COLES, 1980). The elevation in calcium, magnesium and glucose levels after treatment trial can be attributed to type of treatment which has been applied especially intravenously injected (Cal-D-Mag). It can be also attributed to good appetite, well assimilation and absorption after treatment.

Finally, it is recommended that using organophosphorus compounds, like malathion, should be cautioned in dilution then according to the manufacturer instruction in order to minimize the possibility of toxicity. Furthermore, applying proper line of treatment will minimize the losses which may occur.

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