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بعض التغيرات الأكلينيكية والد موية والكيميائية في مصل الدم بعد حثن خليط من الكوميلين وميو ٣٠١ في الكلاب

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تم في هذا البحث دراسة تأثير خليط من الكوميلين وميو ٣٠١ (جلسريل جواياكولات) على الكلاب . وقد سجلت الأعراض الأكلينيكية والتغيرات البيوكيميائية في مصل الدم في فترات مختلفه قبل الحقن وبعد الحقن .

وقد أسفرت النتائج على أن الحيوانات تفقد الوعى تدريجيا أثناء الحقن مع ارتخاء كامل للمعضلات . وقد لوحظ نقص في درجة حرارة الجسم ونبضات القلب ومعدل التنفس بعد الحقن مباشرة ثم عادت لمعدلها الطبيعي بعد ذلك بالتدريج . ولوحظ أيضا تغيرات مؤقتة في مصل الدم ثم عادت الصورة الى معدلها الطبيعي خلال أربعة وعشرون ساعة .

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**CLINICAL, HAEMATOLOGICAL AND SOME BIOCHEMICAL CHANGES
OF BLOOD SERUM FOLLOWING INJECTION OF A COMBINATION
OF COMBELEN (BAYER) AND MY 301 IN DOGS**

(With 3 Tables)

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SUMMARY

The effect of combined use of combelen (Bayer) and My 301 (Glyceryl guaiacolate) was studied in dogs. The clinical signs and some biochemical changes in the serum were recorded before and 1/4, 1/2, 1, 2, 4 and 24 hours after injection.

During administration, the animal gradually lost consciousness and went into a state of complete muscular relaxation. Body reflexes were recorded. A decrease in body temperature, heart beats and respiratory rates were observed shortly after administration of the agent which gradually returned to normal. There were transient change in some serum constituents. After 24 hours all parameters returned to nearly their preanaesthetic values.

INTRODUCTION

My 301 is widely used in veterinary anaesthesiology especially for equines. The agent is a centrally acting skeletal muscle relaxant which depresses nerve impulse transmission at the internuncial neurons of the spinal cord, brain stem and subcortical regions of brain with negligible effects on respiratory, cardiovascular and haematologic indices, combined with potent muscle-relaxing and analgesic properties (DIETZ *et al.* 1959; GEHERING and LUKANC, 1961; FRITSCH, 1965; WESTHUES and FRITSCH, 1965; DAVIS and WALFF, 1970; JACKSON and LUNDVALL, 1972; FUNK, 1973; SCHATZMAN, 1974; LINDLEY, 1976; SAMY and TANTAWY, 1981; and HAFEZ *et al.* 1983.

The use of tranquilizer either alone or prior to the induction of general or local anaesthesia is important for maintaining the depth of anaesthesia, its reduction as well as for prolonging anaesthesia (SCHEBITZ and TRONICKE, 1964; KUBITZA, 1965; MORCOS, 1968; TANTAWY, 1976 and TANTAWY *et al.* 1979.

The aim of the present work is to study the effect of the combined use of combelen and My 301 in native dogs.

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MATERIAL and METHODS

Fifteen clinically healthy native dogs of both sexes ranging in age from one to five years were used.

The animals were divided into three groups. The first group received My 301 alone intravenously in various increasing doses. The second group was premedicated with combelen in dose of 0.03 ml./Kg.b.Wt. intramuscularly. Fifteen minutes later My 301 was then given intravenously in an increasing doses. During injection the anal, pedal, ear, skin, patellar as well as palpebral reflexes were examined until they were abolished where the injection was stopped.

The dose was calculated per Kg.b.Wt. The third group was used to determine the efficiency of the agents for some surgical interventions.

Some clinical observations were studied to detect the effect of the agent on heart beat, body temperature and respiration. Biochemical changes were also studied, for observation of the effect of the agent on liver and kidney function and blood circulation. Haematocrit (PCV), haemoglobin percentage (Hb), RBCs, WBCs, were also determined (COLES, 1980).

Serum urea nitrogen, total bilirubin, GOT and GPT, were examined by test kits supplied by MERCK, Darmstadt, West Germany. A Spekol- colorimeter was used for the measurements.

RESULTS

The combined use of combelen and My 301 as a general anaesthetic in dogs proved to be satisfactory. Their anaesthetic period with good muscular relaxation lasted for an average period of 35 minutes. During this time all reflexes were abolished. The animals began to regain their reflexes gradually, however, they stayed recumbant for three hours following the elapse of anaesthetic stage. Complete recovery was noticed after four hours.

The calculated doses to produce satisfactory anaesthetic effect was 0.7 gm./Kg.b.Wt. 20% solution.

Combelen normally have a depressant action on the central parasympathatic system, for this reason it reduce the amount of anaesthetic used as well as it prolongs the duration of anaesthesia.

Effect of combined use of combelen and My 301 on temperature, heart beat and respiration as well as haematological and biochemical changes shown in tables 1, 2, and 3.

Regarding the operations it was very easy under the effect of combelen and My 301 to perform- with complete muscular relaxation-splenectomy, entrotomy, gastrotomy, ovariectomy and nephrectomy.

DISCUSSION

Our findings on hypothermia agreed with those obtained by SAMY and TANTAWY (1981) and HAFEZ et al. (1983). They attributed this effect to excessive loss of heat due to vasodilatation caused by the depressive effect on the peripheral sympathetic system. The slowing down of respiration is to be regarded as an expression of the sedative and hypnotic effect of combelen on the respiratory center. Our finding coincide with those observed by SAMY and TANTAWY (1981) in ruminants and HAFEZ et al. (1983) in donkeys.

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SAMY and TANTAWY (1981) mentioned that the decrease in the cardiac rate might be due to central suppression of the sympathetic trunk.

My 301 has a wide safety margin as respiration is not severely depressed (SCHEBITZ and TRONICKE, 1964; and WESTHEUS and FRITSCH, 1965).

The combined use of combelen - My 301 was followed by a rapid reduction of the peripheral PCV level, RBCs count, Hb content and WBCs count.

From table (2) it appears that at one hour post injection of applied anaesthesia all studied haematological parameters were strongly affected. This appears in the form of the lowest recorded levels of RBCs count, PCV, Hb content and total WBCs at that time. From the figures stated at table (1 & 2) it appears that the maximum anaesthetic effect of injected medicament was one hour post injection. Return to rather normal figures of studied parameters was evident at the 24 hours post injection. This means that at this time the body eliminated completely the injected anaesthetic. These results were confirmed by DE MOOR *et al.* (1978) and BOLBOL and HASSAN (1982). They concluded that when an anaesthetic drug is administered, it acts in two ways, it causes firstly relaxation of smooth musculature of the spleen and secondly prevent the sympathetic adrenaline discharge by blocking nervous impulses within CNS. As a result, the spleen is dilated greatly and preserving large amount of blood cells. On the other hand, the drug itself acts on the red cells as a hypertonic solution leading to outflow of the blood cellular fluids into the blood stream (BOLBOL and HASSAN, 1982).

The increase in urea and total bilirubin (table 3) agreed with that results obtained by EL-AMROUSI and SOLIMAN (1965), and HAFEZ *et al.* (1983).

From table (3) it can be concluded that a progressive double or three fold increase in both GOT and GPT was evident since the elapse of 15 minutes post-injection. This was continued till the 4th hours post-injection for GOT, while for GPT was still above the pre-injection one. At 24 hours post-injection GOT and GPT returned gradually similar to the pre-injection level as shown in table (3).

Increased level of serum urea was recorded at 15 minutes post-injection that was they allowed unregular pattern of change till the end of the experimental period (24 hours). At that time serum urea level amount 18.1 mg.% which was not of significantly differed from the pre-injection level (16.6 mg.%).

From the highest level of total serum bilirubin recorded at 15 minutes and onward post-injection, serum total bilirubin decreased gradually, however at the end of the experimental period the recorded level of that indices was still rather above (0.23 mg.%) the pre-injection level (0.17 mg.%).

The increased in S.GOT activity (table 3) may be attributed to struggling that may cause slight destruction of muscles fibers during recovery period. Also, the change in a GPT activity (table 3) could be attributed to the effect of the agent on the hepatic cells during excretion (CLARCK *et al.* 1965).

The increase in serum urea indicate temporary renal dysfunction due to relaxation of muscles associated with dilatation of the blood vessels that act on the renal blood flow.

Elevation of serum bilirubin indicates hepatic involvement or extrahepatic obstruction (COLES, 1980). Also, HAFEZ *et al.* (1983) suggested that the drug were potentially hepatotoxic.

REFERENCES

- Blood, A.E. and Hassan, M.S. (1982): Effect of Xylazine/chloral hydrate on the blood circulation of sheep. *Vet. Med. Review*, 1, 91-99.
- Clarke, R.S.J.; Kirwan, M.J.; Dundee, J.W. and Mitchell, E.S. (1965): Clinical studies of induction agents. XIII liver function after propanidid and thiopentone anaesthesia. *Brit. J. Anaesth.*, 37, 415.
- Coles, E.H. (1980): *Veterinary clinical pathology*. W.B. Saunders Company, Philadelphia and London.
- Davis, L.E. and Wolff, W.A. (1970): Pharmacokinetics and metabolism of glyceryl guaiacolate in ponies. *Am. J. Vet. Res.* 31, 469.
- De Moor, A.C. and C. Van den Hende (1968): Effect of propionylpromazine, promethazine and atropine on PCV and circulating red cell mass in horses and cattle. *Zbl. Vet. Med. A.* 15, 544.
- Dietz, O.; W. Krause and H.G. Sattler (1959): Das medikamentelle Niederlegen und die Narkose mit dem Muskelrelaxans Guajakol-Glyzerinather- Grunan (GGG) beim Rind. *Mn. Vet. Med.*, 14, 363.
- El-Amrousi, S. and M.K. Soliman (1965): Some haematological and biochemical studies following administration of the tranquillizer Ro- 5- 2807 in Egyptian buffaloes. *Indian Vet. J.* 42, 301.
- Fessler, L. (1970): Clinical experience with Bay Va 1470 (Rompun). *Wien. tierarztl. Mschr.* 57, 155.
- Fouad, K. (1966): Largactil premedication before epidural anaesthesia in dogs. *Proc. First Ann. Vet. Med. Ass. Congress, Cairo*, P. 159.
- Fritsch, R. (1965): Die Eignung des Guaiakolglyzerinathers zum medikamentösen Ablegen von Pferd und Rind und zur Dauerrelaxation in der tetanus - Therapie. *Zbl. Vet. Med.*, 12, 278.
- Funk, K.A. (1973): Glyceryl guaiacolate: Some effects and indication in horses. *Equine Vet. J.*, 5, 15.
- Gebring, W. and A. Lukanc (1961): Das medikamentöse Niederlegen des rinde mit Guakakol- glycerinather. *Tierarztl. Umschau*, 16, 429.
- Georgiew, B. and D. Drumew (1966): Action of some neurologic and tranquilizing drugs on ruminants. *Acta. Vet. Hung.*, 16, 263.
- Grandy, J.L. and W.N. Mc Bonell (1980): Evaluation of concentrated solutions of guaifenesin for equine anaesthesia. *J.A.V.M.A.* 176, 619.
- Hafez, A.M.; Hassaan, N.K. and M. Tantawy (1983): Clinico-Haematologic studies on the combined application of combelen and My 301 in donkeys. Under publication in *Vet. Med. Rev.*, 2/1983. (Accepted).
- Jackson, L.L. and R.L. Lundvall (1972): Effect of glyceryl guaiacolate- thiamylal sodium solution on respiratory function and various haematological factors of the horse. *J.A.V.M.A.*, 161, 164.
- Jones, L.M. (1965): *Veterinary pharmacology and therapeutics*. (Third Ed.) Oxford and IBH Publishing Comp., Calcutta.
- Khamis, M.Y. and M.S. Saleh (1970): Beitrag zur Anwendung des preparates Bay Va 1470 (Rompun) beim Buffel. *Vet. Med. Nachr.* 4, 274.
- Kubitza, G. (1965): Combelen beim Warmblutpferd. *Vet. Med. Nachr.* 1, 33.
- Lindley, W.H. (1976): Glyceryl guaiacolate in anaesthesia. *Modern Vet. Practice*, 57, 121.
- Morcos, M.B. (1968): Clinical trials with propionyl promazinecombelen for tranquillization and sedation of farm animals. *J. Egypt. Vet. Med. Ass.*, 28, 223.
- Mottelib, A.A. and M.H. El-Gindi (1975): Studies on buffaloes tranquilized by Rompun (Bayer). *Zbl. Vet. Med. A.*, 22, 407.

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- agner, G.; Hoffmeister, F. and G. Kroneberg (1968): Pharmakologische Grundlagen eines neuartigen preparates fur Analgesie, sedation und Relaxation in der Veterinarmedizin. (Bay Va 1470). *Dutch. tierarztl. Wsch.*, 22, 565.
- Samy, M.T. and M. Tantawy (1981): The clinical application of combined Rompun and My 301 in buffaloes. *Vet. Med. Rev.*, 2, 177.
- Schatzman, U. (1974): The induction of general anaesthesia in the horse with glyceryl guaiacolate. Comparison when used alone and with sodium thiamylal (Surital). *Equine Vet. J.*, 6, 164.
- Schebitz, H. and R. Tronicke (1964): Zur sedierung und Narkose beim Pferd. *Berl. Munch. tierarztl. Wsch.*, 77, 93.
- Tantawy, M.; Bolbol, A. and A.A. Mottelib (1979): Studies on the clinical use of several tranquillizers in donkeys. *Vet. Med. Rev.*, 2, 106.
- Tantawy, M. (1976): Approach to laparotomy in equines (*Equus asinus*) in the standing position under the effect of tranquillizers and local anaesthesia. Thesis M.V.Sc., Assiut Univ.
- Westhues, M. and Fritsch, R. (1965): Muscular relaxants: guaiacol glycerol ether. In: *Animal Anaesthesia Vol. 2. (General Anaesthesia)*. Oliver and Boyd, Ltd., London, 181.

Table (1): Effect of Combelen and My 301 on Temperature, heart beat and respiration of dogs.

Time	Temp. C	Heart beat	Resp./min.
Before injection	39.4	108	44
After 15 min.	38.5	98	27
30 min.	37.7	96	22
1 hr.	36.4	82	22
2 hrs.	37.7	80	24
4 hrs.	37.9	91	31
24 hrs.	39.1	102	41

Table (2): Effect of Combelen and My 301 on RBCs, PCV, Hb and WBCs.

Time		RBCs	PCV	Hb	WBCs
Before		6.9	42	13.6	10.200
After	15 min.	5.3	32	12.1	9.800
	30 min.	3.7	34	10.2	8.100
	1 hr.	3.1	30	10.0	8.200
	2 hrs.	3.2	33	10.8	8.750
	4 hrs.	4.7	34	12.6	9.600
	24 hrs.	6.6	41	13.2	10.400

Table (3): Effect of Combelen and My 301 on some serum constituent

Time		GOT u/100	GPT u/100	Urea mg. %	T. Bilirubin mg. %
Before		24.7	21.8	16.6	0.17
After	15 min.	74.1	74.3	34.5	0.32
	30 min.	67.3	42.0	32.0	0.27
	1 hr.	61.0	33.3	27.0	0.25
	2 hrs.	62.7	36.1	30.5	0.26
	4 hrs.	60.0	31.0	22.7	0.25
	24 hrs.	22.7	19.5	18.1	0.23