

## صورة دم الماعز المخدرة بواسطة الرومبون « باير »

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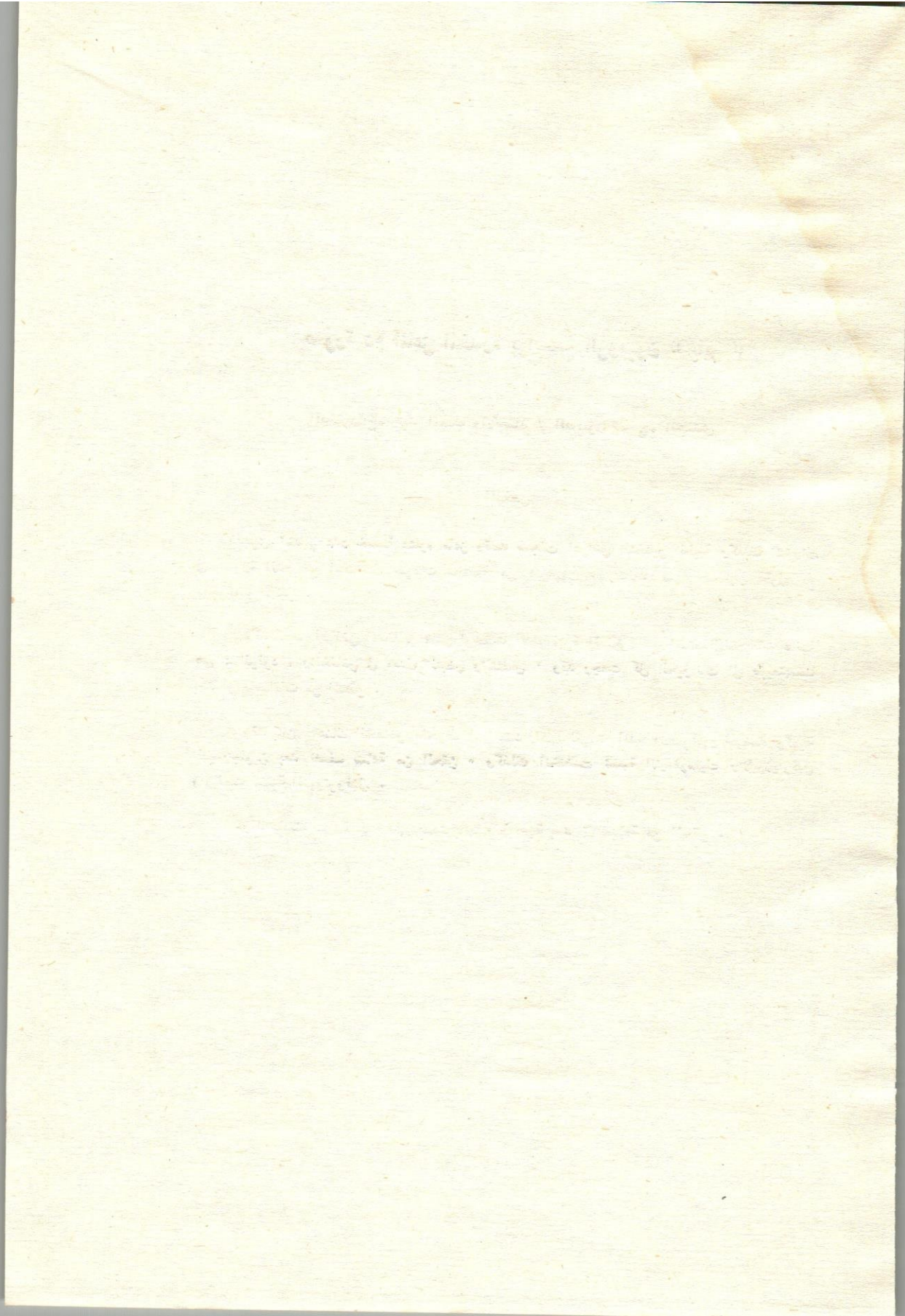
### الملخص

أجرى تخدير عدد خمسة عشر ماعز وقيد سجلت أعراض التخدير الطبية وكذلك التغيرات في صورة الدم مع استعمال جرعات مختلفة من الرومبون . وكانت فترة السكون أطول مع الجرعات الأكبر .

وقد كانت أعراض التخدير التي لوحظت أثناء فترة السكون مع استعمال جرعات عالية هي : الرقود ، وانخفاض في معدل النبض والتنفس \* وقد رجعت كل الحيوانات الى طبيعتها بعد أربع ساعات من الحقن .

وقد كان هناك انخفاض ملحوظ في العدد الكلي لكرات الدم الحمراء والبيضاء وكمية الهيموجلوبين بعد نصف ساعة من الحقن \* وكذلك انخفضت نسبة الليمفوسيت والايوزينوفيل وارتفعت نسبة النيوتروفيل .

وقد عادت صورة الدم الى مستوياتها الطبيعية بعد ٢٤ ساعة من الحقن .



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## BLOOD PICTURE OF GOATS TRANQUILLIZED BY ROMPUN — "BAYER"

(With 4 tables)

By

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### Summary

Tranquillization of goats was performed on fifteen animals. The clinical symptoms as well as the blood picture were observed and recorded using different doses of the drug. The higher the dose given the longer was the sedation period.

By using higher doses of the drug, the observed symptoms during sedation period were: recumbency, sleeping, salivation, moaning, tympany, fluctuating body temperature and dropped respiratory and pulse rates. All animals became apparently normal 4 hours post-injection.

There was a marked decrease in the total number of erythrocytes, leucocytes and haemoglobin content, half hour post-injection. The percentage of lymphocytes and eosinophils was decreased, while that of neutrophils was increased. The blood picture returned back to its initial levels within 24 hours post-injection.

### INTRODUCTION

Generally, tranquillizers are used for sedation of the excited and intractable animals, as well as in a great number of surgical interventions as sole anaesthetic and in some cases in addition to local or general anaesthesia (TEUSCHER and MEITH 1959, 1961; PAUFLER, 1960; NIEMAND, 1962; SUTER, 1962; FOUAD and MORCOS, 1965; MONZALY, 1967; MORCOS, 1968 and EL-GINDI 1969).

The use of the tranquillizers prior to the induction of anaesthesia is very essential in veterinary practice, as the onset is rather more regular, beside decreasing the duration and the intensity of voluntary and involuntary excitation. Not only is the depth of anaesthesia evenly maintained, but

also the amount of required anaesthetic can be reduced and the safety margin therefore is undoubtedly increased (VOSS, 1959 ; KRAFT, 1962 ; SOLIMAN, EL-AMROUSI and KHAMIS 1966).

However, nothing is mentioned in the available literature about the use of such drugs in goats. Therefore, the aim of the present work is to study the effect of the tranquillizer "Rompun" on the blood picture in goats, besides recording its clinical manifestations using different doses.

### MATERIAL AND METHODS

In this study fifteen male goats were included. They were 1-3 years old and their weights ranged from 30-45 kg. They were divided into three groups of five animals each. The three groups were injected intramuscularly with the tranquillizer "ROMPUN". The respective therapeutic doses were 0.14, 0.17 and 0.28 mg/kg. body weight. The injected animals were put under clinical observation *i.e.* their temperature, pulse and respiratory rates were recorded.

Rumination, defaecation, urination, general appearance and demeanour were also noticed. The condition of the special senses including skin sensation, ear reflex and ophthalmic reaction as well as the locomotor apparatus were also observed along the duration of sedation.

Blood samples with EDTA were collected from the jugular vein before, 1/2, 2, 4 and 24 hours after the injection. These samples were used for R.B.C. and W.B.C. counts, Hb determination and differential leucocytic count (COLES, 1967).

The results were analysed statistically, using the student's "T" test.

### RESULTS

#### *Clinical Observations*

The mode of action was generally the same with all dosages. With respect to swiftness of onset and potency of action they differed only in degree according to the dose. In regard to the onset and distinction of the effect, there were considerable individual variations with the same dosage.

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\* Rompun : Bayer, Leverkusen Germany. The chemical formula is : 2-(2, 6 Xylidino)-5, 6 dihydro-4 H-1, 3 thiazine hydrochloride.

With an intramuscular dose of 0.14 mg/kg. body wt., distinct sedation was observed 12 minutes post-injection. The animals were depressed, showing incoordination of movement, staggering gait and unwilling to stand. After one hour, 4 animals lay down while the fifth one remained standing. The body temperature was increased to the maximum of 0.5°C after 4 hours injection (table 1). Also, the pulse and respiratory rates were significantly decreased. Neither the body reflexes nor the ruminal movements were affected.

TABLE 1: Mean values of body temperature, pulse and respiratory rates of goats before and after injection of Rompun

Clinical observation	Dose (mg/kg.B.W.)	Before injection	After injection			
			½ hr.	2 hrs.	4 hrs.	24 hrs.
Temperature (Centig.) . . .	0.14	39.5	39.7	39.2	40.0	39.5
	0.17	39.5	39.6	37.2	40.1	39.2
	0.28	39.8	39.4	38.8	39.1	39.7
Pulse (number/min.) . . . .	0.14	78	60	45	56	67
	0.17	84	70	58	68	78
	0.28	90	50	46	68	85
Respiration (number/min.)	0.14	28	22	20	22	24
	0.17	32	17	13	24	30
	0.28	34	20	17	28	32

With an intramuscular dose of 0.17 mg/kg. body wt., 2 animals were recumbent resembling the milk fever position *i.e.* sleeping with head and neck laterally turned backwards 10 minutes post-injection. After about 20 minutes, all animals except one were seen in a sternal recumbency. The standing animal was depressed, drowsy and tried to lean against a support. The animals became calm, tranquil and ceased to produce the characteristic cry of goats and gave instead a short growling or moaning sound. After half

an hour, the observed symptoms were general weakness, profuse watery salivation, decreased skin sensibility and delayed corneal and pupil reflexes. The urine passed in increased quantities. The ruminal function was decreased (1 per 2 Minutes) with deprived appetite. The body temperature increased; the maximum being  $+ 0.6^{\circ}\text{C}$ ; while the pulse and respiratory rates were dropped (Table 1).

After 1.5 hour, the respiration became shallow and irregular. The animals regained their standing capacity, after 2 hours from the injection. Later on, rumination and prehension of food began. On principle, dose of 0.28 mg/kg. body wt. showed the same picture of action, but it differed from the lower dosage (0.17 mg/kg. body wt.) in so far as the effect was more intense and lasted longer. In addition, the tranquillized animals showed lateral recumbency, bloat, protrusion of the tongue out of mouth, complete relaxation and dropping of the eyelids. All the reflexes as well as ruminal function were abolished in almost all animals.

The body temperature showed a transient decrease in returning to normal after 24 hours. The pulse and respiratory rates dropped to about half of the normal values, 2 hours after the injection. The cardiac function showed a similar picture. The respiration became intermittent with clear exaggerated expiratory movements. After about 4 hours all animals regained their standing capacity and began to eat but still depressed.

#### *Blood Picture*

The main haematological changes observed following the administration of Rompun were a decrease in the total number of erythrocytes and haemoglobin content. The total number of white cells and percentage of lymphocytes were decreased, while that of neutrophils increased with slight shift to the left, (Tables 2, 3 and 4). The absolute leucocytic count show marked changes. The initial blood Values were restored within 24 hours post-injection.

#### DISCUSSION

Generally, the forementioned clinical symptoms, following the administration of Rompun were more or less the same as those described by SAGNER, HOFFMEISTER and KRONEBERG (1968); ROSENBERGER, HEMPEL and NAUMEISTER (1968); AHLERS, FRERKING and TREU (1968); MANGLES (1969); CLARKE and HALL (1969) in cattle; KHAMIS and

SALEH (1970) in buffaloes using the same drug. The previously mentioned clinical observations could be explained on the basis that the therapeutic doses of tranquillizers give rise to three main neuropsychological manifestations : namely psychic, autonomic and somatic.

TABLE 2 : Blood picture of goats before and after injection of Rompun  
(Dose : 0.14 mg/k.g.b.w.)

Blood constituents	Before injection	Time after injection			
		½ hr.	2 hrs.	4 hrs.	24 hrs.
R.B.Cs (10/c.mm.)	15.57 ± 0.28	10.51 ± 0.85	10.36 ± 1.18	10.82 ± 0.55	13.29 ± 0.36
Hb. (gm %)	10.2 ± 0.15	9.1 ± 0.2	9.4 ± 0.06	9.34 ± 0.1	10.04 ± 0.1
W.B.Cs (10/cmm.)	8.17 ± 0.22	8.09 ± 0.22	7.53 ± 0.19	7.76 ± 0.28	8.05 ± 0.2
Stab %	0.6 ± 0.24	2.6 ± 0.24	4.6 ± 0.24	3.6 ± 0.24	0.6 ± 0.24
Abs. No./mm <sup>3</sup>	(49)	(210)	(346)	(279)	(48)
Polysegmented %	40.8 ± 2.51	44.2 ± 1.73	50.4 ± 0.64	43.2 ± 1.54	0.8 ± 0.31
Abst. No./mm <sup>3</sup>	(3333)	(3575)	(3795)	(3352)	(3284)
Eosinophils %	1.0 ± 0.32	0.8 ± 0.2	0.6 ± 0.24	0.8 ± 0.2	1.0 ± 0.32
Abst. No./mm <sup>3</sup>	(81)	(64)	(45)	(62)	(80)
Lymphocytes %	55.4 ± 0.55	50.8 ± 1.14	42.4 ± 0.22	50.6 ± 1.44	55.8 ± 1.22
Abst. No./mm <sup>3</sup>	(4526)	(4109)	(3192)	(3926)	(4491)
Monocytes %	1.8 ± 0.66	1.4 ± 0.24	1.4 ± 0.24	1.2 ± 0.2	1.2 ± 0.2
Abst. No./mm <sup>3</sup>	(147)	(113)	(105)	(92)	(96)
Basophils %	0.4 ± 0.24	0.4 ± 0.24	0.6 ± 0.24	0.6 ± 0.24	0.6 ± 0.24
Abst. No./mm <sup>3</sup>	(28)	(32)	(45)	(46)	(48)

± = Stand. error\* P < 0.05    \*\* P < 0.01    \*\*\* P < 0.001

With the administration of small doses of Rompun, we noticed a mild rise in body temperature, while on using large doses, we observed a fall in it. The momentary antipyretic action of the drug has also been recorded, using other tranquillizers upon different species of animals by FOUAD, (1960); SOLIMAN, ZAKI and SOLIMAN (1965 b); SOLIMAN *et al.* (1966); MONZALY, EL-AMROUSI and EL-GINDI (1972). They attributed the hypothermic action of tranquillizers to the excessive loss of heat, as a result of depression of the peripheral sympathetic system which gives rise to peripheral vasodilation.

TABLE 3 : Blood picture of goats before and after injection of Rompun  
(Dose : 0.17 mg/k.g.b.w.)

Blood Constituents	Before injection	Time after injection			
		½ hr.	2 hrs.	4 hrs.	24 hrs.
R.B.Cs (10/c.mm.)	13 64±0.36	10.35±0.34 **	10.45±0.36 ***	11 54±0.28 **	12.70±0.47
Hb. (gm%)	9.5 ±0.55	9.0 ±0.04	8.68±0.47	8.98±0.13	9.5 ±0.13
W.B.Cs (10/c.mm.)	8.24±0.47	7.18±0.02	6.94±0.37	7.19±0.18	8.15±0.47
Stab. . . . .	0.4 ±0.24	2.0 ±0.0	3.2 ±0.2	2.2 ±0.2	0.2 ±0.2
Abs. No./mm <sup>3</sup> . . . .	(32)	(143)	(222)	(158)	(16)
Polysegmented%	37.0 ±1.07	40.2 ±0.66 *	44.4 ±0.67 ***	37.6±0.67	37.0 ±0.79
Abst. No./mm <sup>3</sup> . . . .	(3049)	(2884)	(3081)	(2703)	(3015)
Eosinophils%	1.0 ±0.31	0.6 ±0.24	0.6 ±0.24	0.8 ±0.2	1.0 ±0.31
Abst. No./mm <sup>3</sup> . . . .	(82)	(43)	(41)	(57)	(81)
Lymphocytes%	59.6 ±0.50	56.0 ±0.63	50.4 ±0.71 ***	58.0 ±0.71	59.8 ±1.05
Abst. No./mm <sup>3</sup> . . . .	(4911)	(4020)	(3497)	(4170)	(4873)
Monocytes%	1.4 ±0.64	1.0 ±0.5	1.2 ±0.2	1.2 ±0.2	1.6 ±0.24
Abst. No./mm <sup>3</sup> . . . .	(115)	(72)	(83)	(86)	(130)
Basophils%	0.4 ±0.24	0.2 ±0.63	0.2 ±0.2	0.2 ±0.2	0.4 ±0.24
Abst. No./mm <sup>3</sup> . . . .	(33)	(14)	(14)	(14)	(33)

± = Stand. error. \* P < 0.05 \*\* P < 0.01 \*\*\* P < 0.001

The decrease in respiratory and pulse rates were in accordance with ROSENBERGER *et al.* (1968), SAGNER *et al.* (1968); CLARKE and HALL (1969) in cattle; KHAMIS and SALEM (1970) in buffaloes. The same picture was also reported by GEORGIEW and DRUMEW (1966) and FESSEL (1969) using other tranquillizers in domestic animals. The slowing of respiration that occurs under the action of Rompun can be regarded as an expression of its sedative and hypnotic effect on the respiratory centre.

The decrease in the cardiac function might be due to a Central suppression of the sympathetic trunk (SAGNER *et al.*, 1968). Profuse watery salivation was a prominent clinical symptom in Rompun tranquillized goats.



In fact, there is no explanation to offer here as, it is well known that tranquillizers normally have a depressive action on the central parasympathetic system, with subsequent inhibition of salivary and gastrointestinal secretions (JONE, 1965).

TABLE 4 : Blood picture of goats before and after injection of Rompun  
(Dose : 0.28 mg./kg.b.w.)

Blood Constituents	Before injection	Time after injection			
		½ hr.	2 hrs.	4 hrs.	24 hrs.
R.B.Cs. (10/c.mm.)	13.66±0.19	10.55±0.87 *	10.19±0.37 **	11.71±0.55 *	12.36±0.39
Hb. (gm %) . . . . .	9.78±0.10	9.3 ±0.14 *	9.2 ±0.29	9.44±0.18	9.6 ±0.99
W.B.Cs (10/c.mm.)	8.23±0.41	5.81±0.77	7.99±1.13	7.63±0.75	8.3 ±0.84
Stab. % . . . . .	0.4 ±0.24	2.0 ±0.0	3.0 ±0.0	1.2 ±0.20	0.2 ±0.20
Abs. No./mm. . . . .	(33)	(116)	(240)	(91)	(17)
Polysegmented % . . .	38.0 ±0.71	39.8 ±1.11	41.6 ±1.16	39.6 ±0.51	38.2 ±0.80
Abst. No./mm <sup>3</sup> . . . . .	(3127)	(2312)	(3354)	(3022)	(3170)
Eosinophils % . . . . .	1.0 ±0.22	0.4 ±0.24	0.6 ±0.24	0.6 ±0.24	0.8 ±0.20
Abst. No./mm <sup>3</sup> . . . . .	(82)	(23)	(48)	(46)	(68)
Lymphocytes % . . . . .	58.8 ±0.58	56.8 ±1.27	53.4±1.29	57.4 ±1.16	59.4 ±0.80
Abst. No./mm <sup>3</sup> . . . . .	(4859)	(3300)	(4267)	(4380)	(4930)
Monocytes % . . . . .	1.4 ±0.24	0.8 ±0.38	1.4 ± 0.24	1.0 ±0.32	1.4 ±0.37
Abst. No./mm <sup>3</sup> . . . . .	(115)	(47)	(112)	(76)	(116)
Basophils % . . . . .	0.4 ±0.24	0.2 ± 0.20	0.0 ±0.0	0.3 ±0.20	0.2 ±0.20
Abst. No./mm <sup>3</sup> . . . . .	(33)	(12)	(0)	(15)	(17)

± = Stand. error. \* P < 0.05 \*\* P < 0.01

It was found that the rumen motility was reduced, a fact which agrees with the results obtained by TESIC and DIMITRIJEVIC (1959), GEORGIEW and DRUMEW (1966) and MONZALY (1967) using other types of tranquillizers in domestic animals. On the other hand, STOBBER (1958)

mentioned that ruminal movements were not affected with normal therapeutic doses, although influenced by high doses of phenothiazine derivatives. ROSENBERGER *et al.* (1968) attributed the reduced rumen movements and tympany in Rompun-tranquillized cattle to the depressing effect of the drug on its motility which will lead to accumulation of gasses in the rumen. The centrally acting muscle relaxant effect leads to a general relaxation of the musculature which complements the condition of sleep and the freedom from a reduction of pain.

— From the present study, it can be summarized that the haematological findings, following the administration of Rompun were a decrease in the number of erythrocytes and haemoglobin content which denotes a momentary dilution of the circulating blood as a sequel of increased momentary migration of the interstitial fluid to the vascular system. These effects were in accordance with those of other tranquillizers reported by KUTTNER (1955), HOE and WILKINSON (1957), FOUAD (1963) and SOLIMAN *et al.* (1966) in dogs; MARTIN and BECK (1956), TOLGYSI (1959, 1960), EL-SABBAN (1964); DE MOOR and VAN DEN HENDE (1968) in horses; EL-AMROUSI and SOLIMAN (1965) in buffaloes; GARTNER, PYLEY and BEATTIE (1965), SOLIMAN *et al.* (1965), LEPPERT (1967); DE MOOR and VAN DEN HENDE (1968) in cattle.

On the other hand, TURNER and HODGETTS (1960); DE MOOR and VAN DEN HENDE (1968) mentioned that the most likely explanation for erythropenia is a splenic storage of erythrocytes during the period of sedation.

Marked leucopenia, lymphopenia, eosinopenia with subsequent rise in neutrophils were observed during the sedative effect of Rompun. These results seem to be rather similar to the observations in dogs by KUTTNER (1955), POSPISIL, KOMAREK and POSPISILOVA (1959), FOUAD, (1963) and SOLIMAN, *et al.* (1965 a); in cattle by SOLIMAN, *et al.* (1965 b) and in buffaloes by EL-AMROUSI and SOLIMAN (1965) using different types of tranquillizers.

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