

Ministry Of High Education And Scientific Research
University Of Diyala
Veterinary Medicine College

Hematological and Clinical changes in rabbits exposed to
Lantana camara's leaves powder

**Research presented to the college of veterinary medicine
by**

ABDEL-MONAM SABEA

**As a Partial Fulfillments of obtaining the Bachelor's Degree in
Veterinary Medicine and Surgery**

Under supervision of:
Dr. Raad Mahmud Husain

٢٠١٤- ٢٠١٣

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

”يُرِيدُ اللَّهُ الْكَافِرِينَ وَالْمُشْرِكِينَ وَالْمُنَافِقِينَ وَالْمُنَافِقَاتِ
الَّذِينَ أُطْعِمُوا مِنْكُمْ لَعْنَةُ اللَّهِ الْكَلْبَاتِ“

صدق الله العظيم

المجادلة (آية ١١)

الإهداء

إلى من جرع الكأس فارغاً ليسقيني قطرة حب
إلى من كلت أنامله ليقدّم لنا لحظة سعادة
إلى من حصد الأشواق عن دربي ليمهد لي طريق العلم
رحمه الله والدي العزيز

إلى من أرضعتني الحب والحنان
إلى رمز الحب وبلسم الشفاء
إلى القلب الناصع بالبياض والذتي الحبيبة

إلى القلوب الطاهرة الرقيقة والنفوس البرينة إلى رياحين حياتي إخوتي

إلى الأرواح التي سكنت تحت تراب الوطن الحبيب الشهداء العظام

الآن تفتح الأشرعة وترفع المرساة لتنتقل السفينة في عرض بحر واسع مظلم هو بحر الحياة وفي هذه الظلمة لا يضيء إلا قنديل الذكريات
ذكريات الأخوة البعيدة إلى الذين أحببتهم وأحبوني أصدقائي

إلى الذين بذلوا كل جهدٍ وعطاء لكي أصل إلى هذه اللحظة أساتذتي
إليكم جميعاً أهدي هذا العليل

شكر و تقدير

الحمد لله رب العالمين والصلوة والسلام على معلم البشرية وهاوي الإنسانية وحلي آله وصحبه ومن تبعهم بإحسان إله يوم الدين.
أتوجه بالشكر الجزيل لكل من ساهم في إخراج هذا البحث إله حمير السفين، إله كل من كان سببا في تعليمي وتوجيهي ومساعدتي.
إله الدكتور الفاضل **نزار جبار مصلح**.

حيث لم يأل جهدا في إرشادي وتوجيهي أثناء عملي في البحث.

وإله الدكتور الفاضل **م.م. رعد محمود**

وإله عمادة كلية الطب البيطري / جامعة ويدا

SUMMARY

The study was conducted on 10 local breeds rabbits of 1- 1.5 kg body weight, from both sexes , of 1-2 years old . Rabbits were feed concentrated pellet food , and left ad libitum for water . They kept in room of 20 -25°C , with half day light . The animals were divided into two groups of 5 each , the first group was exposed to Lantana camara' s leaves powder at dose rate of 5 gm/animal for 14days, while those of second group left with out exposure as control group.

Blood samples were collected from both the exposed and control groups in vials containing EDTA as anticoagulant , the blood samples were submitted to blood examinations included , erythrocytes count , Hb concentration , packed cell volume , bleeding time and clotting time. The clinical signs were included body temperature, respiratory rates, heart rates and body weight.

The results revealed that body weight , body temperature and respiratory rates were decreased significantly in the 14 and 28 days post exposure to plant in comparison with the pre exposure time , the lowest body weight was in 14 days . Body weight of control group showed an increased in value during the experiment . The results revealed that heart beat in days 14 and 28 post exposure it showed an increased rates which was significantly differ from pre exposed rate in day 28.

The results revealed that bleeding , clotting times , were increased in 14 and 28 days post exposure to plants . while values of RBC , Hb concentration and PCV were decreased in 28 days post exposure .

INTRODUCTION

Lantana is a natural plant belong to pyrrolizidine alkaloids , family Verbenaceae . the active substance in lantana camara leaves is triterpentine acid (Seawight and Hrdlkicka 1977; Sharma et al 1984 a; Achhireddy et al 1985 ; Sharma et al , 1990 , Sharma et al 1991a ; Sharma et al 1991b) showed an alkaloid crystal extract from lantana leaves named Lantanin B when this compound recrystalized another compound extracted named Lantadene A which is responsible for hepatic damage and appearance of clinical signs specific to the disease . Pan et al 1993 extract another compound from lantana camara leaves named Icterogenin B this compound prevent secretion of bile lead to retention of it .and appearance of jaundice

Clinical, signs that appear in animals depend on quantity of toxic substance in leaves , the physiological conditions of animals , and duration of exposure to plant (Sharma et al 1981a).

MATERIALS AND METHODS

The study was conducted on 10 local breeds rabbits of 1- 1.5 kg body weight, from both sexes , of 1-2 years old . Rabbits were feed concentrated pellet food , and left ad libitum for water . They kept in room of 20 -25°c , with half day light . The animals were divided into two groups of 5 each , the first group was exposed to Lantana camra ' s leaves in powder form at dose rate of 5 gm/animal for 14days, while those of second group left with out exposure as control group.

Blood samples were collected from both the exposed and control groups in vials containing EDTA as anticoagulant , the blood samples were submitted to blood examinations included , erythrocytes count , Hb concentration , packed cell volume , bleeding time and clotting time (Coles , 1986).The clinical signs were included body temperature, respiratory rates,Heart rates , body weight.

The results were analyzed according (Steel and Torrie 1985)

RESULTS AND DISCUSSION

The results revealed that body weight decreased significantly in the 14 and 28 days post exposure to plant in comparison with the pre exposure time ($1.408 \pm 0.056\text{kg}$), the lowest body weight was in 14 days ($1.120 \pm 0.041\text{kg}$). Body weight of control group showed an increased in value during the experiment. (Table -1-).

The results revealed that respiratory rates were significantly decreased in the 14 and 28 days post exposure to plant in comparison with the pre exposure time ($153.6 \pm 21.0 / \text{minute}$), the lowest level was in 14 days post exposure ($74.0 \pm 12.06 / \text{minute}$).

The results revealed that heart beat in days 14 and 28 post exposure decreased significantly (table -1 -).

The results revealed that body temperature non significantly changed (table -1-).

Table -1- Clinical signs in rabbits exposed to Lantana camara 's Leaves powder.

test
group

RESULTS AND DISCUSSION

The results revealed that body weight decreased significantly in the 14 and 28 days post exposure to plant in comparison with the pre exposure time ($1.408 \pm 0.056\text{kg}$), the lowest body weight was in 14 days ($1.120 \pm 0.041\text{kg}$). Body weight of control group showed an increased in value during the experiment. (Table -1-).

The results revealed that respiratory rates were significantly decreased in the 14 and 28 days post exposure to plant in comparison with the pre exposure time ($153.6 \pm 21.0 / \text{minute}$), the lowest level was in 14 days post exposure ($74.0 \pm 12.06 / \text{minute}$).

The results revealed that heart beat in days 14 and 28 post exposure decreased significantly (table -1-).

The results revealed that body temperature non significantly changed (table -1-).

Table -1- Clinical signs in rabbits exposed to Lantana camara 's Leaves powder.

Days			group	test
28	14	0		
1.218±0.067-b-	1.120±0.041-a-	1.408±0.056-b-	expose	Body weight ; Kg
1.737±0.231	1.533±0.199	1.488±0.157	Control	
100.5±15.76-b-	74.0±12.06-b-	153.6±21.0 -a-	expose	Respirat.rates / minute
140.0±34.02	139.0±11.55	145.4±20.66-b-	Control	
162.5±10.31ab c	154.0±13.12- ab-	177.6±6.76-b-	expose	Heartbeat / minute
190.67±25.1	175.33±10.41	180.0±19.84	Control	
37.98±0.18-b-	37.3±0.66-b-	38.24±0.56-b-	expose	Body temp. °C
38.13±0.57	38.17±0.52	38.54±0.26	Control	

Values: $M \pm S.E.M.$ a, b, c, significantly difference at $P < 0.05$

The results revealed that bleeding , clotting times , were increased in 14 and 28 days post exposure to plants . while values of RBC , Hb concentration and PCV were decreased in 28 days post exposure (Table -2-)

Table -2- Hematological changes in rabbits exposed to Lantana Camara 's Leaves.

Days			group	test
28	14	0		
43.8±13.9	45.0±7.4	36.0±4.0	Expose	Bleed . time / seconds
36.7±1.7	38.3±13.02	35.0±4.7	Control	
40.0±10.6	87.5±42.5	46.0±6.8	Expose	Clott. time / seconds
51.7±29.5	55.0±15	56.0±11.3	Control	
3.90±0.1	4.90±0.6	5.30±0.6	Expose	RBC x 10 ⁶ /cmm
5.20±0.5	5.10±0.6	4.80±0.4	Control	
10.98±0.3	11.3±0.3	12.0±0.5	Expose	Hb g%
11.70±0.3	11.4±0.6	12.3±0.4	Control	
32.00±0.9	33.5±1.04	35.2±0.6	Expose	PCV%
31.30±0.9	33.7±1.7	33.0±1.2	Control	

DISCUSSION

Clinical signs that appear in animals depend on quantity of toxic substance in leaves, the physiological conditions of animals, and duration of exposure to plant (Sharma et al 1981a).

loss of body weight, general weakness and death, before death depress body temperature (Sharma et al, 1981 b)

Sharma et al 1988a described the disease in rabbits received 2, 4, and 6 g/ kg b.wt. of leaves or extract at 125- 100 mg / kg b.wt. the signs appeared 4-6 days post exposure, represented by loss of appetite, digestive disturbances, as severe constipation, jaundice, dehydration, increase respiratory and heart rates, loss in body weight, general weakness, photosensitization

Hematological changes Dhillon et al, 1970; Sharma et al, 1981b; Uppal and Paul 1982 referred to increased PCV in sheep, cows and buffaloed

Seawright 1963b showed mild increased in PCV. Sharma et al 1981b attribute this increase in PCV to dehydration and animal loss of appetite. Uppal and Paul 1982 referred this to decrease in body proteins.

Hari et al 1973 showed decrease PCV in end of toxicity.

Seawright 1963b; Sharma et al, 1981b; Uppal and Paul 1982 showed acute decrease in RBC, Hb. Total Platelets count. while Dwivedi et al 1970 showed slight decrease in RBC and Hb start from day 5 till end of experiment.

Dhillon et al 1970; Sharma et al. 1981b; Kalra et al 1984 referred to prolongation in bleeding and clotting times during toxicity; Uppal and Paul 1982 add that the increase in clotting in sheep start in day 3 reach the longest time in day 7 (7,68- 9,5 minute clotting time). and he concluded that the increase in clotting time depend on dose and duration of poisoning. they attributed this increase to decrease in synthesis of prothrombin with decrease in protein and fibrinogen synthesis which occur as a result of liver damage. In conclusion the lantana leaves exhibit an effects on clinical and haematological parameters in rabbits exposed to the powder of leaves.

REFERENCES

- Achhireddy , N.R. ; Singh ,M.; Achhireddy ,L.L.; Nigg ,H.N. ; and Nagy , S. (1985).Isolation and partial characterization of phytotoxic compounds from Lantana camara . J. Chem. Ecol. ; 11: 979- 988.
- Coles ,E.H. 1986 .Veterinary Clinical Pathology .4th ed. W. B. Saunders Co. Philadelphia : 20 , 98 and 102.
- Dhillon , K.S.; Paul , B.S.(1971). Clinical studies of Lantana camara poisoning in buffalo calves , with special reference to its effect on rumen motility . Ind. J. Anim. Sci. ; 41 : 945/
- Dhillon ,K.S. ; Paul ,B.S. and Gary , B.D. (1970) . Some haematological aspects in Lantana camara poisoning in buffalo calves . J. Res. ; 7 : 262 -266.
- Dwivedi , S.K.; Shivnani , G.A. and Joshi , H.(1970). . Clinical and biochemical studies in Lantana camara poisoning in ruminants .Ind. J. Anim. Sci. ; 41 : 948 -953.
- Gopinath , C. and Ford, E.J.H. (1969). The effect of Lantana camara on the liver of sheep . J. Path ; 99 : 75- 85 .
- Hari , R.; Shivanani , G.A. and Joshi , H.C. (1973). Therapeutic efficacy in lantana poisoning in buffalo calves in relation to clinical and hematological studies . Ind. Vet. J. ; 50 : 764 -770.
- Hoe, C.M. and Wilkinson, J.S. (1973). Liver function : A review. Aust. Vet .J. ; 49 : 163-169.
- Kalra , D.S.; Dixit , S.N.; Verma , P.C. and Dwivedi , P.(1984). Studies on experimental Lantana poisoning in buffalo calves with special reference to its pathology and histochemistry . Haryana Vet. ; 23 : 987 – 105
- Pan , W.D.; Li , Y.J.; Masi , L.T.; Ohtanin , K.; Kasai , R. and Tanako , O.(1992).Studies on chemical constituents of the roots of Lantana camara . Acta . Pharma. Sinica . ; 27 : 515- 521
- Radeleff , R.D.(1964) .Veterinary Toxicology .Lea and febiger :65 .

- Seawright, A.A. (1963b) . Studies on experimental intoxication of sheep with *Lantana camara* . Aust. Vet. J. ; 39 : 340- 344.
- ~~Seawright A.A.(1964). Studies on experimental intoxication of sheep with *Lantana camara* . Aust. Vet. J. ; 39 : 340- 344.~~
- Seawright, A.A. (1965c). Toxicity for the guinea pig of extract of *Lantana camara* . J. Comp. Path. ; 75 : 215-221.
- Seawright, A.A. and Hrdlicka , J.(1977). The oral toxicity for sheep of triterpene acids isolated from *Lantana camara* . Aust. Vet. J.;53: 230- 235.
- Sharma ,O.P. ; Makkar , H.P.S.; Darwa , R.K. and Negi , S.S.(1981a).. A review of the toxicity of *Lantana camara* in animals . Clini. Toxicol.; 18 :1077.
- Sharma , O.P. ; Makkar , H.P.S., ; Darwa , R.K. and Negi , S. S.(1981 b).Fragility of erythrocytes in animals affected by *Lantana* poisoning . Clinic. Toxicol.; 18 : 25-35.
- Sharma, O.P.(1984 a).*Lantana camara* toxicity , Control and Utilization . Bio. Med.; 9 :204-209.
- Sharma, O.P. ; Darwa , R.K. ; Krishna , L and Makkar , H.P.S. (1988a). Toxicity of *Lantana camara* leaves and isolated toxins to rabbits . Vet. Hum. Toxicol.; 30 : 214- 218.
- Sharma, O. P. ; Darwa , R.K.and Ramesh , D.(1990). Atriterpenoid acid , Lantanen D from *Lantana camara* .Ind. Vet. Res. ; 29 : 3961.
- Sharma , O.P.; Darwa, R.K. and Pattabhi ,V.(1991a).Molecular structure , polymorphism and toxicity of Lantaden A, the pentacyclic triterpenoid from hepatotoxic plant , *Lantana camara* . J. Biol. Toxicol.; 6: 57- 63.;
- Sharma ,O.P.; Vasid ,J. and Sharma , P.D.(1991b).Comparison of Lantadens content and toxicity of different taxa of the *Lantana* plant .Ind. J. Res. ;17: 2283.
- Uppal, R.P. and Paul, B. S. (1982). Hematological changes in experimental *Lantana* poisoning in sheep . Ind. Vet. J. 59: 18-24.

الخلاصة

الدراسة تتضمن ١٠ ارانب محلية السلالة تتراوح اوزانها ما بين ١ - ١.٥ كغم من كلا الجنسين الارانب تم تغذيتها على طعام بشكل بلت وتركت حرة على الماء .

ثم وضعت الارانب في غرفة درجة حرارتها من ٢٠ - ٢٥ ° س هذه الارانب تم تقسيمها الى مجموعتين كل مجموعة ٥ ارانب.

المجموعة الاولى تعرضت الى اوراق نبات اللنتانا كما را بشكل باودر بجرعة ٥ غم / كغم لمدة ١٤ يوم بينما المجموعة الثانية بدون تعرض (للسيطرة) .

جمع عينات الدم من كلا المجموعتين المتعرضة والسيطرة في انابيب تحتوي على مانع تخثر EDTA. عينات الدم للفحص وتتضمن عدد كريات الدم الحمراء والهيموغلوبين و P.C.V ووقت النزف ومعدل التخثر والعلامات السريرية التي تتضمن درجة الحرارة ومعدل التنفس وضربات القلب والوزن .

نتائج البحث كانت تتضمن نقصان ملحوظ في الوزن ودرجة الحرارة ومعدل التنفس من ١٤ - ٢٨ يوم بعد التعرض للنبات بينما مجاميع السيطرة لوحضت زيادة عليها في النسب خلال التعرض .

النتائج في النزف وتخثر الدم كانت في زيادة في ١٤ - ٢٨ يوم بعد التعرض بينما نسب كريات الدم الحمراء وال P.C.V والهيموغلوبين كان في نقصان خلال ٢٨ يوم بعد التعرض

شكرا لأصغائكم