

قسم : العقاقير - كلية الصيدلة - جامعة أسيوط .

رئيس القسم : أ.د / أحمد عبد الرحمن على

اختبار وظيفة الكبد في الأرناب بعد تغذيتها باللانتانا

كامارا ومستخلصها

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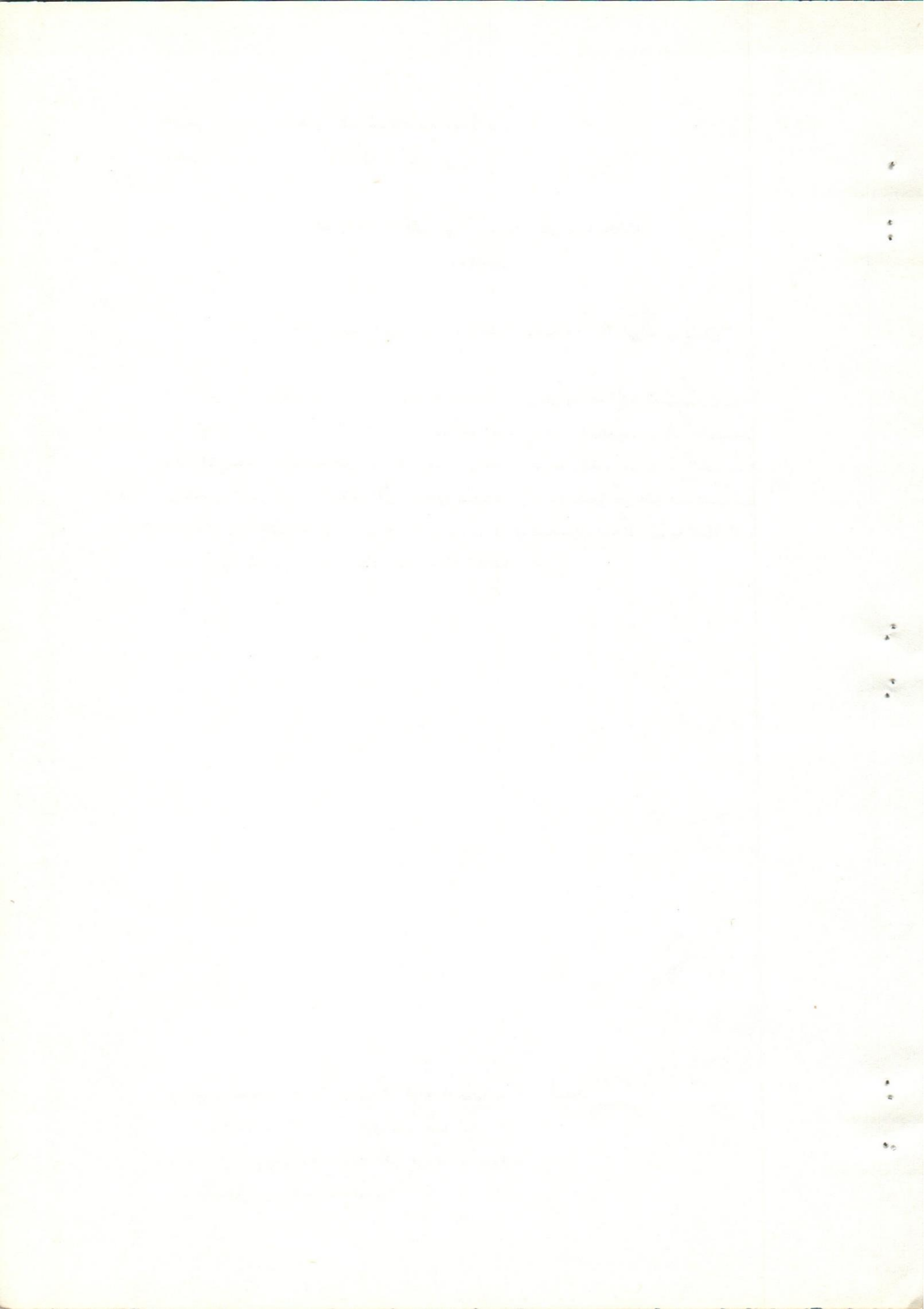
تم فى هذا البحث دراسة تأثير اوراق نبات اللانتانا كامارا على وظائف الكبد لعشودد ٢٠  
أرناب لمدد متفاوتة ولقد لوحظ ارتفاع معنوى فى محتويات السيرم لمادة البيلووروسين أما البروتين  
وماقى الانزيمات التى درست فلم يكن هناك تغيير ذو قيمة فسيولوجية عالية . وتبين من البحث  
ان الخاصة السمية للنبات قليلة فى الأرناب التى استطاعت ان تؤقلم نفسها على اكلة حيث لسم  
تحدث تغييرات اكلينيكية واضحة على الارناب حتى بعد ان استبدلت العليقة الاساسية العادية  
بعليقة أخرى مكونة من أوراق اللانتانا الخضراء والجافة فقط .

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## SOME LIVER FUNCTION TESTS IN RABBITS FED LANTANA CAMARA LEAVES & EXTRACT

(With One Table)

By

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(Received at 24/1/1982)

### SUMMARY

The present investigation was designed to study the toxic effect of different doses of Lantana camara leaves and their processed extract fed to 20 adult healthy male and female Balady rabbits to elucidate their side effects on the functional activity of the liver during the non-green season. Ten g. fresh leaves offered for 7 successive days induced significant increase in serum total bilirubin ( $P/0.001$ ) while 30 g. offered for the subsequent successive 7 days and 2 g processed oily extract (containing the active principle, triterpenes) mixed with the control ration for one day showing no increase either in the total bilirubin or in GOT, GPT or total protein. When the fresh and dried leaves offered in liberal amounts to the rabbits instead of the control ration, significant increase ( $P/0.05$ ) in the total bilirubin (from  $0.57 \pm 0.04$  to  $0.87 \pm 0.117$  mg%) was noticed.

Symptoms of severe intoxication as recorded in the literature could not be observed during the whole experiment. The moisture and protein contents of the leaves are 67.50% and 16.45% respectively.

### INTRODUCTION

Lantana camara is an ever-green ornamental shrub indigenous to tropical and subtropical regions and extensively cultivated in hedges of public and private gardens all over Egypt. The poisonous properties of the plant were recorded in cattle (SANDERS, 1946), sheep (SEAWRIGHT, 1963 and 1965a), rabbit, & rat (SASTRY and MAHADEVAN, 1963), and guinea pig (SEAWRIGHT, 1965b). General intoxication, icterus, hepatic dysfunction, photosensitisation and complete loss of the animal were recorded for Lantana camara poisoning (SANDERS, 1946; KNOTT, 1955 and SEAWRIGHT, 1965b). On the other hand, WATT and BREYER-BRANDWICK (1962) cited that the leaves of the plant were used for the treatment of cough, cold, jaundice, chest diseases and as diaphoretic or stimulant.

In Egypt, EL-SAYYAD (1970) studied the lipids, carbohydrates, essential oils, triterpenes and lactones of Lantana camara. Lantadene A and B which were isolated and proved to be the toxic active principal of the plant (SEAWRIGHT, 1965b) could not be verified. However, SHARAF and WAGUIB (1959) showed that the alcoholic extract of the leaves lowered the blood pressure, accelerated deep respiration, stimulated intestinal movement and inhibited uterine motility in rats, with no further symptoms.

The aim of the present paper is to study the presence of any toxic effect of Lantana camara in alive rabbits applying the liver function tests. Moreover, the nutritive value of the plant as a green fodder during the summer season was considered.

### MATERIAL and METHODS

A group of twenty male and female adult healthy Baladi rabbits varied in weight between 1.2-1.5 Kg were used in the present study. During the control period, these animals fed a dry ration composed in percentage of: crushed white corn, 35; crushed horse beans, 32; ferrous sulfate treated decorticated cottonseed meal, 20 and wheat bran, 13. The ration was supplemented by mineral mixture and vit. A D<sub>3</sub>E concentrate.

The experiment was performed during the dry season. The scheme of feeding and the amounts of leaves or its processed extract offered and consumed by the animals are shown in the table.

The processed extract was prepared from 1 Kg Lantana camara dried powdered leaves using 96% ethanol. The ethanolic extract was concentrated to dryness. The residue (240 g) was chromatographed over silica gel column



and the eluted fractions (benzene: ether 3 : 7 and ether) were found by thin layer chromatography over silica gel (Merck) to contain steroidal and triterpenoidal components. The collected fractions were concentrated under reduced pressure. The oily residue was mixed with the control ration before being offered to the animals (2 g for each animal). The different amounts of the leaves or its processed extract were offered successively in variable periods to the same group of animals with between the different treatments on which blood was sampled (by heart puncture).

Total bilirubin, glutamic oxalacetic transaminase (GOT), glutamic pyruvic transaminase (GPT) and total protein were determined in the blood sera using the test kit (Boehringer Mannheim, West Germany): Haemolysed serum samples were discarded. The moisture and protein content of the leaves were estimated according to A.O. A.C. (1970).

Rabbits were clinically examined daily for any abnormal signs.

According to SNEDECOR (1956), t- test was applied for the obtained data.

## RESULTS

The obtained results are summarized in the table. It is evident that 10 g fresh leaves of Lantana camara induced a significant increase in the total bilirubin ( $P/0.001$ ). The GOT, GPT and total protein showed no valuable variations. Thereafter, the bilirubin became normal. At the end of the experiment when the fresh and dried leaves replaced the control ration the total bilirubin increased again to a significant level of ( $P/0.05$ ).

During the experiment most of the animals appeared healthy. Some rabbits exhibited semisolid faeces especially at the beginning of the trial and after the addition of the processed oily extract of the leaves but with no further complications. The ability of the animals to consume the fresh leaves varied between individuals.

With the advance of the experiment, few rabbits refused for a while the leaves but at the end of the trial all animals became accustomed to it.

Two rabbits were died during blood sampling and the postmortem findings revealed no gross lesions in their internal organs except haemorrhages around the heart.

The moisture and protein contents of the leaves were 67.50% and 16.45% respectively.

## DISCUSSION

The significant increase ( $P/0.001$ ) in total bilirubin in rabbits fed 10 g Lantana camara leaves for 7 days with no clinical manifestations indicating a moderate toxicity in comparison with the reported literature. Moreover, the variations observed in the sera GOT, GPT and total protein reflect certain disturbances in the liver functions. The symptoms of toxicity recorded by SANDERS (1946), SASTRY and MAHADEVAN (1963) and others could not be traced in our experiment even when the animals were fed both fresh and dried leaves only and for 10 successive days. The increase in bilirubin at the end of the experiment (from  $0.571 \pm 0.040$  to  $0.870 \pm 0.117$  mg%) seems to be undangerous as the level did not exceed one mg%. This may be attributed to the animals being accustomed to the toxic principles of the leaves.

The high production of green leaves all over the year and the high protein content (16.45%) besides the observed moderate toxicity and accommodation of the animals for it, might permit the use of Lantana camara leaves as a green fodder during the Summer season when added to the ration in small amounts.

LIVER FUNCTION, RABBITS FED LANTANA CAMARA

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Liver function tests in rabbits fed different amounts of Lantana camara leaves or its extract during the dry season

Treatments	L.C. offered (daily)	L.C. consumed (daily)	Number of serum samples	Liver function tests				
				Bilirubin	GOT	GPT	Protein	
				mg%	U/L	U/L	g%	
Control ration for 2 weeks	---	---	13	0.570 + 0.040	27.15 + 5.16	20.54 + 7.28	6.91 + 0.14	
Control ration + L.C. fresh leaves for 7 successive days	A	10 g	10 g	12	1.890*** + 0.200	27.42 + 4.62	20.67 + 3.20	6.21 + 0.33
	B	30 g	approx. 15 g	15	0.610 + 0.023	30.6 + 5.01	17.31 + 1.50	7.06 + 0.15
Control ration + L.C. Processed extract for 1 day		2 g mixed with ration	1 g	8	0.670 + 0.095	32.37 + 8.40	17.13 + 1.68	7.16 + 0.25
	Fresh and dried L.C. leaves only for 10 successive days	200 g	approx. 120 g	9	0.870 + 0.117	62.11** + 6.18	22.00 + 1.45	6.84 + 0.27

L.C. Lantana camara, Mean  $\pm$  S.E.,

\*\*  $P \leq 0.01$

\*  $P \leq 0.05$

\*\*\*  $P \leq 0.001$

