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Studies on blood urea level of opium addicted albino rat

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Abstract

This study attempts to evaluate that health status of the albino rat on the basis of blood urea changes under opium addiction. Rats were orally feed with opium of constant dose i.e. 1.38g/kg body weight for 5, 10 and 15 days significant changes were observed in the form of hyperuremia, Necrosis and haemorrhage in various organs. The present study concludes that the opium taken in the little quantity prove sometimes beneficial but by their chronic use may alter physiological condition of albino rats causes various diseases and abnormalities.

Keywords: blood urea, blood serum, albino rat, hyperuremia, narcosis, opium

Introduction

Any substance that can cause physiological biochemical or psychological absurd is called drugs. Actually the amount or dose intake is important thing. The opium a narcotic is used as drug to getrid from mental anxieties and to kill the pain. It is basically used as pain killer but an active ingredient of it addicts the rat. The addiction becomes dangerous making the rat unsocial and unhealthy. The work will be helpful in exploring the blood urea changes in the drug addicted rat.

Very scanty information is available as regards to effects of opium to albino rat like Alarcon (1969) Atweh & Kumar (1983) Ball and Snarr (1969) Hill *et al.* (1993) Arti & Akela (1993) [2], Akela & Arti (1994) Arti & Akela (1996) [3] Ravati *et al.* (2003), Shipra *et al.* (2005) Aruna *et al.* (2007) [4].

Material and method

The healthy adult male & female albino rats of equal weight and age were selected for experiments after proper acclimatization to laboratory condition.

The albino rats were divided in to two groups. Group-I The rats kepts as control were fed with normal pellet diet. Group- II The second group of rats were orally feed with opium of constant dose i.e. 1.38g/kg body weight for 5, 10 and 15 days. Blood was collected directly from the heart on dissecting the anaesthalized albino rat. Heparin was used as anticoagulant. Serum urea was determined following the method of Varley 1963, Wooten 1974.

All the data were analysed for statistical significance between the means (\bar{x}) of the experimental and control group by using student 't' test and p values calculated to determine the level of significance.

Result and Discussion

The result obtained in control rats were found to 38.34 ± 0.05 mg/100 ml and 36 ± 0.04 mg/100 ml of blood in males and females respectively.

In 5 days opium addicted rat the value of blood urea were found to be 18 ± 0.05 mg/100 ml male and 16 ± 0.05 mg/100ml in female.

In 10 days addicted rat its value were 22 ± 0.07 mg/100 ml and 20 ± 0.05 mg/100 of blood urea in male and females respectively. While in 15 days addicted rat value of blood were found to be 30 ± 0.05 mg/100 ml and 28 ± 0.04 mg/100ml in males and females respectively.

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Table 1: Showing the effect of opium on blood urea level of male albino rat

Parameter	Control Rats	Opium Addiction (In Days)		
		5	10	15
Serum Urea mg/100 ml	38.34 ± 0.06	18 ± 0.05	22 ± 0.07	30 ± 0.05

Value are mean ± S.E of 5 individual observation

Table 2: Showing the effect of opium on blood urea level of male albino rat

Parameter	Control Rats	Opium Addicton (In Days)		
		5	10	15
Serum Urea mg/100 ml	36 ± 0.04	16 ± 0.05	20 ± 0.05	28 ± 0.04

Value are mean ± S.E of 5 individual observation

Thus it was found that acute opium toxicity caused a significant depletion in the level of blood urea but chronic opium addiction form 10 days to onward led to significant increase the level of blood urea.

In the acute addiction the depletion in the level of urea might be because of distributed physiology of liver because liver is the site of urea synthesis. It also might be because of the poor filtration of urea in the renal tubules. Although the increase in the renal of urea content is 8 days addicted rats and onwards reported by Arti & Akela (1993) [2] might be possible to regulate the body physiology and biochemistry.

Opium toxicity might have stimulated the adrenal gland which in turn secretes much amount of corticoids. These corticoids increase the rat of metabolism leading to production of much nitrogenous substance. Some worker like Kanwar & Kanwar (1989) [1] recorded increase urea synthesis in frog on the effect of ammonia toxicity.

In the present work the increase the level of blood urea might be due to increase in the activity of arginase enzyme in liver which in turn is responsible for the increase synthesis of urea in liver tissues. The another possible reason behind the elevation is its level might be because of narcosis. During narcosis the damage of hepatic cells might have produced various nitrogenous product like ammonia which might helped urea synthesis. It also might be due to impaired function of kidney.

In the present investigation a slight higher value of blood urea in male than of female might be because of high metabolic rate in male than that of female rates.

Graph

Opium addiction in days

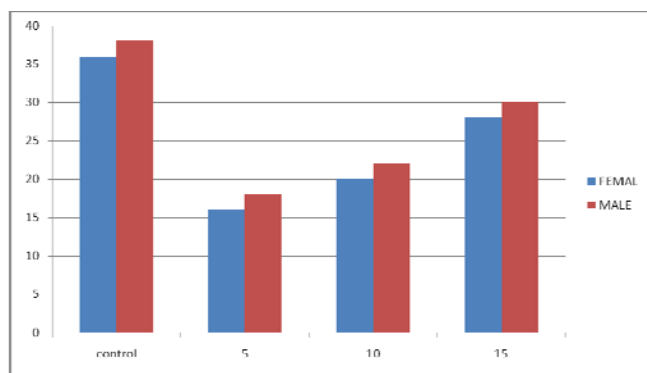


Fig 1: Showing the effect of opium addition on blood urea in male & female albino rat

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