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ORIGINAL ARTICLE

OPIUM FEEDING AND HAEMATOLOGICAL ALTERATIONS IN SWISS ALBINO MICE

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ABSTRACT:

This study attempts to evaluate the health status of swiss albino mice on the basis of haematological changes under opium addiction Mice were orally feed with opium of constant dose i.e. 1.38 g/kg body weight for 5,10 and 15 days. Significant changes were observed in the form of Erythropoesis Anaemia leucocytopenia. Neutropaenia, Lymphopaenia, Eosinophilia polycythaemia, hypoxic. The present study conclude that opium feeding in the little quantity prove sometimes beneficial but by their chronic use dullness, mental retradness and other clinical symptoms are experinced. The opium may alter physiological condition of swiss albino mice causes various disease and abnormalities.

KEY WORDS :- Hb, TEC, DLC, PCV, Swiss albino mice, Erythropoesis, Anaemia, Leucocytopenia, Eosinophilia. Anaemia, Polycythaemia, Hypoxic.

INTRODUCTION :

Any substance that can cause physicological, biochemical or psycological absurds is called drug. 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 mice. The addiction becomes dangerous making the mice unsocial and unhealthy. The work will be helpful in exploring the haemotological changes in the drug addicted mice.

Very scanty information is available regarding apium addiction. (Kanwar & Kanwar 1989; Naik & Kar, 1993; Gray, 1993, Akela et.al. 1993, Arti & Akela 1993, Revathi et.al. 2003 Shipra et.al. 2005., Majumdar, 2005; Muthalagi 2006, Aruna et.al. 2007).

MATERIAL AND METHODS :

The swiss albino mice Mus domestics domestics were purchased from CDRI Lucknow. They were brough in suitable cage and reared in laboratory with proper supply of food and water. For actual experiment 90 days old albino mice of approximately same weight (180/190g) were selected. Colony bred adult albino mice were miantained in a well ventilated animal house with 12 hrs light and 12 hrs dark scheduled. Experimental albino mice were fed a standard pellet diet (Hindustan Lever Ltd.) with proper supply of water.

The mature male and female mice of equal weight and age were selected for experiment after proper acclimatization to laboratory condition were divided into following two groups.

Group-I: 10 albino mice kept as control were fed with normal pillet diet.
Group-II: The second group of mice were orally fed with opium of constant dose i.e., 1.38g/kg body weight for 5.10 and 15 days. Blood were collected directly from the heart on dissecting the anaesthesized swiss albino mice. Heparin were used as anticoagulant. At the end of exposure period the mice were anaesthesized with Malothane and Methoxyflurance and were the processed for quantitative estimation of haemoglobin, RBC by the method of Darmady & Davenport (1954), differential count of WBC by Akela et.al. (1996) PCV by srivastava & Das (1995).

RESULT AND DISCUSSION :
Haemoglobin (Hb): In the present work opium addiction in albino mice were found to cause a gradual and highly significant depeltion in the haemoglobin (Hb) at each of the succeeding days i.e., 5,10 and 15 days of addiction. In males the values are depleted during 5,10 and 15 days and highly significant while in famale the values are less than male but shows similar depletion tendency (Table-1&2).

The present finding are in conformity with findings at shipra et.al. (2005), clearly explained that significant decrease in the haemoglobin contents at all the doses level compared to control groups. The decrease in the haemoglobin content might be due to the decreased rate of haemoglobin synthesis during erythropoesis, when erythrocytes are damaged the globin portion of the haemoglobin is broken down and the iron released is carried by transfer in either to the bone marrow for production of new red blood cells or to the liver for storage in the form of ferritin.

Total R.B.C. (TEC) :- In the present study opium addiction was found to cause gradual and highly significant depletion in the total number of erythrocytes at each of the succeeding days i.e- 5,10 and 15 days of addiction. In the male and female the value are depleted during 5,10 and 15 days and is highly signficant (Table- 1 & 2).

The present findings are in confimity with findings of Revathi et.al. (2003). explained the signficant decrease in RBC content in the treated mice is due to anaemic condition.

Recently Shipra et.al. (2005) clearly explained that significant decline in the total RBC count which is accordance with reduced haemoglobin content. Very recently Muthalagi (2006), showed similar significant reduction in C. Mirghala on expouse to different substitute concentration of domestic sewage.

Total W.B.C. :- Gradual and highly significant depletion in the total number of leucocytes at each of the succeeding days i.e.5,10 and 15 days of addiction. In male and female the values are depleted during 5,10 and 15 days and is highly significant (Table-1 & 2).

The present findings are in conformity with finding of Revathi et.al. (2003) and Shipra et.al. (2005). Shipra et.al. (2005) clearly explained that highly significant decline in the total leucocytes count was recorded at all autopsy days with all the does levels. W.B.C. paly a very important role in the defence mechanism of body. A decrease in WBC count is termed as

leucocytopenia. The common cause of this include septicemia (blood-poisoning) in which the body literarlly runs out of WBC's.

Differential count of W.B.C. (DLC) :- In the present study opium addiction was found to increase in the percentate count of Neutrophils under 5,10 and 15 days in both male & female. In both cases under 5,10 days the value are significant while under 15 days the value are highly significant (Table-1 & 2).

In other hand the opium addictions was found to decrease in the percentage count of leucocytes, monocytes.eosinophil, basophil in both male and female under 5,10 & 15 days addiction. In both cases 5,10 & 15 days of addiction lymphocytes and eosinophil values are significant while monocytes and basophil are non signficant (Table -1 & 2).

In the present study increase in the percentage count of neutrophils while decrease in the percentage count of lymphocytes, monocytes, eosinophil and basophil might be because of the fact that opium addiction might have caused adreno corticosteroid hyperactivity stimulated by pituitary adrenocorticotrophic stimulating hormone (ACTH) as suggested by wintrobe (1967). In the present study neutropaenia recorded due to opium addiction and neutrophilia might be due to acclimatization of mice on 10 days addiction, Lymphopaenia might be beause of increased secreation of alrenalinc by adrenal medulla where as polycythaemia might be caused behind basophil.

Packed cells volume (PCV) :- PCV values are decreasing under 5, 10 and 15 days. In male and female the values are depleted during 5,10 and 15 days and is significant (Table- 1 &2). The present study is conformity with Revathi et.al. (2003) has explained similar decreased in PCV, MCV, MCM and MCHC with increase in tannery effluent concentration. Very recently Muthalgi (2006) were found to be significantly reduced in PCV, MCHC in C. mirghala on exposure to different sublethal concentration of domestic sewage. In the present investigation the fall in the percentage of PCV after opium addiction was mainly because of erythropania i.e. decrease in the number of erythrocytes causes hypoxic.

Table-1

Showing the effect of opium addiction On Hb, RBC, WBC, DLC, PCV of male albino mice.

Variable		**Opium addictin (in Day)**		
Parameter	Control	5	10	15
Blood HB(gm/dl)	13.58±0.06	*** 9.76±0.18	*** 8.19±0.12	*** 7.79±0.11
TEC(RBC) ($X10^6$ μl)	7.39±0.01	*** 6.87±0.11	*** 6.42±0.12	*** 5.88±0.08
TLC(WBC) ($X10^3$ μl)	4.90±0.07	*** 4.11±063	*** 3.32±0.01	*** 2.28±0.06
DLC(WBC) (% value)				
Neutrophils	9.84±2.04	** 16.83±3.06	** 13.83±2.4	** 20.1±0.04
Lymphocytes	88.33±2.42	** 82.33±3.9	** 80.17±2.6	** 65±0.02
Monocytes	7±0.03	* 6±0.04	* 3±0.42	* 10±0.03
Eosinophil	3±0.03	** 6±0.04	** 7±0.03	** 4±0.02
Basophil	1.3±0.02	* 1.2±0.01	* 1.0±0.01	* 1.4±0.02
PCV (% values)	47.97±0.06	** 38.66±0.05	** 25.41±0.03	** 18.01±0.03

Values are mean± SE of5 individual observation

*	P< 0.05	N.S.
**	P<0.01	Significant
***	P<0.001	highly significant

Table-2
Showing the effect of opium addiction on Hb, RBC, WBC, DLC, PCV of female albino mice.

Variable		Opium addictin (in Day)		
Parameter	Control	5	10	15
Blood HB (gm/*dl*)	12.58±0.05	*** 8.84±0.03	*** 7.3±0.02	*** 6.3±0.02
TEC(RBC) ($X10^6$ μl)	7.38±0.01	*** 6.25±0.02	*** 6.0±0.01	*** 5.0±0.01
TLC(WBC) ($X10^3$ μl)	4.0±0.01	*** 4.0±0.02	*** 3.0±0.05	*** 2.5±0.05
DLC(WBC) (% value)				
Neutrophils	8.0±0.01	** 15 ±0.02	** 12±0.02	** 19±0.01
Lymphocytes	8.5±0.42	** 81±0.45	** 80±0.03	** 64±0.04
Monocytes	9±0.02	* 8±0.01	* 5±0.02	* 12±0.02
Eosinophil	37±0.01	** 6.7±0.02	** 7.5±0.02	** 4±0.02
Basophil	4.4±0.03	* 3.2±0.03	* 2.2±0.03	* 2.5±0.02
PCV (% values)	46.9±0.01	** 36.25±0.02	** 24.32±0.01	** 17.25±0.02

Values are mean± SE of5 individual observation

*	P< 0.05	N.S.
**	P<0.01	Significant
***	P<0.001	highly significant

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