

Study the role of eques extract of Eucalyptus on some blood and biochemical parameters in laboratory rate .(*Rattus Rattus*)

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الخلاصة

اجريت الدراسة في كلية الطب البيطري جامعة البصرة لتقييم تأثير وفعالية المستخلص المائي لنبات اليوكالبتوس على بعض المعايير الدمية والكيموحيوية ووزن الجسم في الجرذان المختبرية البيضاء اذ قسمت التجربة الى ثلاث مجاميع شملت مجموعة السيطرة جرعت بمحلول الملح الفسيولوجي الطبيعي (0.2) Normal salin مل لمدة 15 يوما اما المجموعتين الثانية والثالثة جرعت ب (0.2 و 0.4) مل من المستخلص المائي لنبات اليوكالبتوس على التوالي لمدة 15 يوما. اظهرت النتائج انخفاض معنوي في وزن الجسم والمعايير الدمية المتمثلة بكريات الدم الحمر والهيموغلوبين وحجم خلايا الدم المرصوص والخلايا البيضاء وانخفاض معنوي في مستوى السكر في الدم .في حين اظهرت النتائج ارتفاعا معنويا في كل من ALT وAST ومستوى اليوريا والكرياتينين.

Abstract:-

present study was conducted at Veterinary Medicine college_ University of Basra to evaluated the effect and activation of eques extract of Eucalyptus globulus plant on some blood and biochemical parameters as well as on body weight in laboratory white rats. The experiments was divided into three group each group consist of six animal, the first group treated with 0.2 ml of normal saline(0.9%) for 15 The days and the second and third group treated with(0.2 and 0.4)ml from eques extract of Eucalyptus globulus for 15 days, the experiment showed that significant decrease ($p \leq 0.05$) in body weight ,red blood cell, hemoglobin ,packed cell volume and white blood cell as well as significant decrease in the level of glucose in the blood , the experiment showed significant increase in the liver enzyme ALT and AST and increase the level of urea and creatinine .

Key Words:-*Eucalyptus*,*RBC*,*WBC*,*AST*,*ALT*

Introduction:-

Plants have the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions and to defend against attack from predators such as insects, fungi and herbivorous mammals[1]. Most of plants contain glycosides, alkaloids, terpenoids

,flavonoids,carotenoids etc that are frequently implicated as having antidiabetic effect[2]. *Eucalyptus globulus* (Family Myrtaceae) is at all evergreen tree native to Australia and Tasmania. Today, most commercial herbal preparations originate in Mediterranean and subtropical regions.

The leaves and oil of *Eucalyptus* plant are used for medicinal proposes. *Eucalyptus* is traditional remedy for a variety of common ailments ,particularly of respiratorty tract, and burns in china . Also, it widely used as natural antioxidant food additives.[3]. *Eucallyptus* leaves contain tannins to reduce inflammation, flavonoids such as quercetin, which has antioxidant properties and volatial oils [3]. *Eucalyptus* contain high levels of

phenolics and terpenoids which can be toxic, animals such as the Koala which eat *Eucalyptus* have developed methods for detoxifying these compounds in the liver [4]. *Eucalyptus* oil possesses awide spectrum of biological activity including antimicrobial, anti fungal,insecticidal , insect repellent, acaricidal and nematicidal [5].

Scientific classification of plant:

Kingdom: Plantae

Subclass: Rosidae

Subkingdom: Tracheobionta

Order: Myrtales

Superdivision: Spermatophyta

Family: Myrtacecae

Division: Flowering plants

Genus: *Eucalyptus*

Class: Dicotyledonns

Species: *Eucalyptus globulus* Labill.

Materials and Methods:

Male rats (*Rattus- Rattus*) weighting about 130-134gm and 6 weeks old were used. They were obtained from experimental animal house in veterinary medicine

University of Basra. The animals were quarantined and acclimated for one week and then randomly divided into three groups.

Preparation of plant extract:

Eucalyptus globulus ,leaves were collected from few trees behind university of Basra . The leaves were air dried and milled into powder. The dried powder plant leaves (5mg) was mixed with 200 ml of distilled water and leaving the mixture overnight at

20-22c°. The mixture was then filtered through four folds of cheesecloth. Fresh preparation was used every day[6)].

Experimental design:

The Rats were randomly divided into three groups (6 rat in each group), Group1: received normal saline 0.2 ml orally for 15 days and served as control group whereas

Group2: received aqueous extract of *Eucalyptus* at the dose 0.2ml orally for 15 days and Group3: received aqueous extract of *Eucalyptus* at 0.4 ml orally for 15 days.

The parameters:

A-Body weight: Initial and final body weight were measured in the experiment.

B-Hematological and Biochemical studies: Blood samples were collected from the heart after the end of experimental period 15 days and put into clean container EDTA and were used for hematological analysis which include (RBCs ,Hb, Pcv and WBCs), for biochemical parameters the blood samples were collected into free anticoagulated containers and centrifuged at

3000 rpm for 10 minutes and the serum was collected in Eppendorf tube and then utilized for estimation serum activities of alanine aminotransferase (AST) were determined according to the method recommended by [7] .Also serum creatinine and urea were determined according to procedures of [8].

Results and discussion

Table (1) Effect oral administration of aqueous extract of *Eucalyptus* on body weight of male rat.

Treatment	Initial body weight(g)	Final body weight(g)
Control group	130.6± 0.816 a	131.1±0.752 a
Group1(0.2)	130.3±0.516 a	123.1±2.228 b
Group2(0.4)	133.0±1.095 a	117.3±1.966 c

Different letters refer to significant differences among groups($P \leq 0.05$)

Table(2)Effect of oral administration of aqueous extract of *Eucalyptus* on hematological parameters in mal rat

Treatment	RBC (10/mm ³)	Hb (g/dl)	PCV (%)	WBC (10 ³ /mm ³)
Control group	8.166± a 0.581	15.188± a 0.507	41.308± a 0.635	6.231± a 0.027
Group1(0.2)	7.216± b 0.248	14.333± b 0.338	31.871± b 0.937	5.298± b 0.679
Group2(0.4)	6.533± c 0.301	12.616± c 0.462	30.1000± c 0.481	4.493± c 0.322

Different letters refer to significant differences among groups($P \leq 0.05$)

Table(3): Effect of oral administration of aqueous extract of *Eucalyptus* on hepatic and renal functions in the male rat.

Treatment	ALT (IU/L)	AST (IU/L)	Creatinine (mg/dl)	Urea (mg/dl)	Glucose (mg/dl)
Control group	34.575± c 1.822	38.448± c 1.474	1.235± c 2.051	41.223± c 1.929	1.705± c 6.745
Group1(0.2)	62.87± b 2.312	76.343± b 5.644	1.331± b 2.651	53.548± b 2.164	1.531± b 2.316
Group2(0.4)	77.715± a 2.773	91.365± a 1.774	1.568± a 2.316	74.200± a 3.562	1.409± a 0.821

Different letters refer to significant differences among groups($P \leq 0.05$)

Effect of aqueous extract of eucalyptus on the animals(rat) induced undersires behavior and external features include general weakness decrease in physical activities and loss of body weight. The decrease in the physical activities may be due to reduce of the blood glucose level [9]. Aqueous extract of plant exhibited significant decline in the body weight as compared to control group the decreased body weight in this study may be due to loss of appetite and decrease in food intake or an increase in the metabolic rate [10]. Who studied the acute and chronic of nivalenol in mice suggested that the decreased body weight due to reduced feed conversion efficiency. The hematological results in this study was showed a depression in the haemoglobin concentration, packed cell volum, red blood cells and total weight blood cells compared with control group, the administration of aqueous extract of eucalyptus lead to or induced anemia. [11] who studied the effect of the oil of plant on the erythrocytes of koalas reported that koala erythrocytes are susceptible to eucalyptus oil and

lead to oxidative damage, there's two types from oil of eucalyptus the first called monoterpenes which induced haemolysis through damage to the intracellular constituents and the second called sesquiterpenes which effect in the erythrocytes membrane. The decreased in the hemoglobin concentration may be due to decrease of erythrocyte counts, hematocrit and may be due to toxemia [12]. The serum ALT and AST increased significantly as compared to the control group, also there's increased in the levels of creatinine and urea when treated animals with aqueous extract of Eucalyptus, the significant changes in the ALT and AST enzymes of liver indicate to liver impairment and liver toxicity [13]. Renal functions like urea and creatinine plasma level [14] and [15]. were found to be increased significantly after administration of aqueous extract of eucalyptus this showed to renal toxicity. From the results can be seen the antihyperglycemic effects of *Eucalyptus globulus* in treated rats [16]

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