

STUDY THE EFFECTS OF DRENCHING AQUOUS EXTRACT OF *ORIGANUM VULGARE* ON SOME HEMATOLOGICAL CHARACTERISTICS OF MATURE MALE DOMESTIC RABBITS.

Zeinab Abdul Wahab Shihab

Department of Physiology and pharmacology ,College of Veterinary medicine

Basrah University ,Basrah, Iraq .

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ABSTRACT

This study was done on twenty mature male rabbits divided randomly into two equal experimed groups of ten animals each . the first group regards as controls and drenched (2ml) normal saline orally daily for thirty days . The other group were drenched (20 mg/kg) body weight of water extract of *origanum vulgare* for thirty days also . At the end of drenching period blood samples were drawn from all animals heart puncture and blood was analysed for total RBC count ; HB % and PCV% ; Total leukocytic count and blood indices of MCH ; MCV ; and MCHC were calculated in addition to blood smears were done to estimate percentages of differential leukocytic counts. Results ; PCV% ; total RBC counts and MCH compared with control group There was significant increase ($P \leq 0.05$) in treated group in total leukocytic count and MCV and significantly decrease only in MCHC . Also there was only significant increase ($P \leq 0.05$) in neutrophils due to treatment

INTRODUCTION

Herbs are still found in 40% of prescription drugs (18) (5). Herbs are most after defined as any part of a plant that is used in the diet for its aromatic properties (18), (5). Also herbs have been identified as sources of various photochemical, while process important antioxidant activity (25) (10). *Origanum vulgare* is a hardy perennial and herbaceous plant which grows wild in its nature areas in mediterranean countries (8) . It contains a total of (38) *origanum* species are recognized in the world and grow abundantly at a wide range of altitudes (0-4000 m) (19). Due to the variability in chemical

and aroma characteristics *Origanum* plants belonging to different species and ecotypes (biotypes) are widely used in agriculture and pharmaceutical and cosmetic industries as culinary herb. Flavoring substances of food products. Alcoholic beverages and perfumery for their spicy fragrance (15) (2). It has also been used as a traditional remedy to treat various ailments such as spasmodic; anti microbial; expectorant; carminative aromatic for whooping and convulsive coughs; digestive disorders and menstrual problems. (2)(4)(3)(6)(20)(23). It contains phenolic terpenoids (thymol; carvacrol); flavonoids (diosmetin; luteoline; apigenin); Tanins; hydroquinone; oleanolic acid; showing strong antioxidant activity. (14) Extracts of *Origanum vulgare* decrease responses to histamine; serotonin and nicotine (11). In folk medicine *origanum* is used for cramps depression; dizziness; gastro-intestinal disorders; migraine; nervous headaches. and paroxysmal cough and as diuretic (24) so according to the information available about the plant and very little published data about its effect on hematology we hypothesized that treatment by *origanum vulgare* may cause some hematological changes in male rabbits as blood parameters are considered the most physiological indicator of whole body and therefore are important in diagnosing The structural and functional status at rabbits (1). In addition hematological studies provide quite frequently and routinely accepted procedures in diagnosis of mammal research disease (16). So according to the information available about the plant we hypothesized that treatment by *origanum vulgare* may cause some hematological changes in rabbits.

MATERIALS AND METHODS

Preparation of extract.

Origanum vulgare plant was purchased from basrah market and the taxonomic identification and authentication was done by college of Science herbarium. Preparation of water extract :-

One gram of dry oregano powder was added to (200 ml) of distilled water and boiled until the volume was reduced to (100 ml). The extract was then stirred at room temperature for (24) hours. Water soluble extracts were obtained following centrifugation at (10000 x) for (14) minutes (13).

Animals :-

Twenty mature local male rabbits were purchased from Basrah market and kept in the animal house of college of veterinary medicine / university of Basrah for one week before treatment for adaptation .Rabbits weighed (1300-1500)gm and were nearly at the same age (6-7 month old) .

Then the experimental animals were randomly divided into two equal groups ten animal in each and were housed in cages with wire mesh at room temperature in the period from 1/11/2012- 7/12/2012 in a 12 hours dark /light cycle .

During the study animals received tap water and food composed of green alfalfa and bread ad libitum plus multivitamins given with drinking water . cages of animals were cleaned and disinfected daily ; Also animals were treated against coccidiosis by amprolium .

Test method :-

Each animal of treated group was drenched (20 mg/kg) body weight per day of water extract of *origanum vulgare* dissolved in (2ml) normal saline . Drenching was continued for thirty days , while control group was drenched (2ml) normal saline for each animal daily for thirty days also.

Obtaining of blood samples :

Blood sample were collected from all animals by cardiac puncture using sterile disposable (5ml) syringes ; the blood was transferred to test tubes containing disodium salt of ethylene diamine tetra acetic acid (EDTA) as anti coagulant and was used for analysis of hematological parameters.

Hematological parameters :

The values of total erythrocytic counts (RBC); packed cell volume (PCV); Hemoglobin (Hb%); total leukocytic counts (WBC) estimate percentages of differential leukocytic counts .

Also blood indices Mean Corpuscular Volume (MCV) Mean Corpuscular Hemoglobin (MCH) ; and Mean Corpuscular Hemoglobin Concentration (MCHC) were

calculated . All those hematological parameters were determined according to methods described in (9) .

Statistical analysis.

Statistical analysis was performed using at test after applying one- way analysis of variance (ANOVA) between the two groups according to (22) . Means and their standard deviations (SD) were calculated using the spss software according to(21). A value of ($p \leq 0.05$) was considered statistically significant.

((Results))

Results of drenching aqueous extract of *origanum vulgare* on hematological parameters of male rabbits are presented in table (1) and on differential leukocytic count are presented in table (2) .It is clear from table (1) that there is no significant effect on Hb% ; PCV% and on total RBC count ; but there is highly significant increase in total leukocytic count ($p \leq 0.05$) . Also there is clear significant increase caused by drenching the aqueous.

Table (1)effect of drenching Aqueous extract of *origanum vulgare* on hematological characteristics and on blood indices of male rabbits .

Groups	Parameters						
	%Hb	%pcv	RBC $\times 10^4$	WBC	MCV cmm	MCH Pg	MCHC Gml100mlblood
Group 1 (Control)	10.4 A \pm 1.4	30 A \pm 3.4	630 A \pm 20.3	8000 A \pm 50.42	47 A \pm 4.21	17 A \pm 2.113	34 A \pm 6.34
Group2 (Treated)	9.5 A \pm 0.95	36 \pm 2.34	594 A \pm 25.4	29117 B \pm 60.35	66 B \pm 3.44	17 A + 3.21	25 B \pm 5.43

Different capital letters vertically means significant difference at (5%) level ($p \leq 0.05$).

Table(2) effect of drenching Aqueous extract of origanum vulgare on percentage of differential leukocytic counts of male rabbits .

Groups	Differential counts percent				
	Lymphocytes	Nutrophils	Eosinophil	Monocytes	Basophil
Group1 (Control)	A 60±4.25	A 20±4.26	A 12±4.31	A 7±1.6	A 1± 0.0
Group2 (Treated)	58 ±5.44 A	30±6.54 B	12±3.36 A	7±1.5 A	1±0.0 A

Different capital letters vertically means significant difference at (5%) level ($p \leq 0.05$).

Extract to the rabbits in mean corpuscular volume (MCV) and in Mean Corpuscular Hemoglobin Concentration(MCHC). But it did not cause any significant change in mean Corpuscular Hemoglobin(MCH).It relation to the differential leukocytic count ; the extract cause only significant increase in nutrophiles .

DISCUSSION

The non significant difference in Hb% , PCV %and total RBC count in this study resemble those found by (13) in rats but it is completely opposit to those found in fish recorded by (12) and this difference may be due to different responses between mammal (rats) and aquatics (fish) . Same trends were found due to hematological indices (MCH) and (MCHC) . in this study (rabbits) while there is significant increase in (MCV) only . But (12) found significant increase in (MCV) and (MCHC) .In recent published work (26) did not find any significant difference in all hematological parameters and blood indices in rats drenched origanum syriacum oil ; so they declared that drenching such oil did not cause any possible secondary effects after oral administration because (1) considered blood parameters are the most physiological indicators of whole body so therefore they are important in diagnosing the structural and functional status of rabbits .

The significant increase in total leukocytic count due to drenching of origanum extract in this study which lead to increase in nutrophils is demented by a similar results

found by (17) they found higher value of phagocytic activity in rabbits fed origanum and they found prolonged immune stimulatory effects which is regarded as beneficial effects of origano plant extract oral administration ; so the dose of origanum vulgare extract used in this study is regarded beneficial like those of other authers mentioned but if the dose used is high it may exert adverse effects as that found by (7) when they found that high dose of origanum vulgare oil had adverse effects on metabolism of mice on the contrary to the lower concentration which have appositve effects on antioxidant status .

دراسة تأثير تجريع المستخلص المائي لنبات المردقوش في بعض الصفات الدموية لذكور الأرانب المنزلية البالغة

زينب عبد الوهاب شبيب

كلية الطب البيطري ،جامعة البصرة، البصرة ،العراق .

الخلاصة

اجريت هذه الدراسة على (20) من ذكور الارانب البالغة التي قسمت بصورة عشوائية إلى مجموعتين متساويتين احتوت كل مجموعة على (10) حيوانات . اعتبرت المجموعة الاولى مجموعة سيطرة وجرعت (2) مللتر من المحلول الفسلجي الطبيعي لكل حيوان يوميا لمدة ثلاثون يوما اما المجموعة الثانية فقد جرعت (20) ملغم/كغم من وزن الجسم من المستخلص المائي لنبات المردقوش لكل حيوان يوميا لمدة ثلاثون يوما ايضا . عند انتهاء فترة التجريع سحبت نماذج دم من جميع الحيوانات بواسطة وخز القلب باستعمال محقنات طبية نبیذه وحللت نماذج الدم لقياس العدد الكلي لكريات الدم الحمر ونسبة الهيموغلوبين ونسبة الكريات الدموية الحمراء المرصوفة والعدد الكلي لكريات الدم البيض . كما تم عمل مسحات دموية حسبت من خلالها نسب العد التفريقي لكريات الدم البيض وقد اظهرت الدراسة النتائج التالية :-

1. لم يكن هناك تأثير معنوي لتجريع المستخلص على نسبة الهيموغلوبين ونسبة الخلايا الدمية الحمراء المرصوفة والعدد الكلي لكريات الدم الحمر وكذلك على معدل هيموغلوبين الكرية الواحدة .
2. كان هناك تأثير معنوي بزيادة العدد الكلي لكريات الدم البيض ومعدل حجم الكرية الحمراء الواحدة .
3. كان هناك تأثير معنوي بنقصان معدل تركيز هيموغلوبين كرية الدم الحمراء الواحدة .
4. وجد ان هناك تأثير معنوي بزيادة نسبة كريات الدم البيض العذلةو بينما لم يكن هناك تأثير على انواع كريات الدم البيض الاخرى.

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