# EFFECTS OF *Moringa olifera* ALCOHOLIC SEED EXTRACT ON SOME HEMATOLOGICAL PARAMETERS AND LIPID PROFILE OF LOCAL RABBITS.

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## ABSTRACT

This study was conducted in animal house of veterinary medicine college /University of Basra in the period between November to December 2013. This study aimed to investigate the effects of alcoholic seed extract of moringa on some hematological and biochemical parameters of local rabbits . Sixteen female rabbits divided into two groups each one contain 8 animals, first group injected subcutaneous S/C by normal saline and second group injected with alcoholic seed extract of moringa 200 mg /kg/ day for 30 days then blood collected to study the some hematological and lipid profile changes that occur due to administration of alcoholic extract of moringa seed. The results showed significant ($p \leq 0.05$) increase in total cholesterol, high density lipoprotein, Low density lipoprotein, blood Mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), Platelets, white blood cell WBC counts, Lymphocyte, Monocyte, and significant ($p \leq 0.05$) decrease in very Low density lipoprotein and Triglyceride.

**Key words:** *Moringa olifera* ,hematological, biochemical parameters , female rabbits.

## INTRODUCTION

The evaluation of various plant products according to their traditional uses and medicinal value based on their therapeutic efficacy leads to the discovery of newer and recent drugs for treating various ailments. This fact forms the basis for the development of new drugs from various plant sources. ( Gupta, 2010).

One of such plants of medicinal value is Moringa olifera, belonging to the family Moringaceae, commonly known as ‘sahajan’ in Hindi, Horse radish in English. moringa small, fast, growing, evergreen, tree that usually grows up

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to 10 or 12 m in height. It is distributed among Sub Himalayan Tracts, Assam, Bengal and Peninsular India, various properties are attributed to it like antispasmodic, diuretic, expectorant ( Nadkarni, 2009).

*Moringa oleifera* Lam is the most widely distributed species of the Moringaceae family throughout the World, especially in Asian countries, having a remarkable range of pharmacological properties in addition to significant nutritional value *Moringa oleifera* is a highly valued plant in tropic and subtropical countries where it is mostly cultivated (Khalafalla,*et al*.,2010). The medicinal properties of the plant's edible parts have been recognized by both the Ayurvedic and Unani systems of medicine in India ( Mughal,*et al* .,1999). The various plant parts have wide medicinal applicability for the treatment of cardiovascular diseases as the roots, leaves, gum, flowers, and seed infusion contain nitrile, mustard oil glycosides, and thiocarbamate glycosides as their important bioactive constituents, which are thought to be responsible for their diuretic, cholesterol lowering, and antiulcer properties ( Anwar, *et al.*,2007).

This study aimed to determined the physiological changes on blood parameters and lipid profile when administration *moringa olifera* alcoholic seed extract to female rabbit.

## MATERIALS AND METHODS

In this study used 16 female rabbits bring from the local market weight 1150-1250g, each two animals put in metal cage diameter 30*45*60 cm, all animal housed for 1 week before start the experiment for adaptation.

The 16 female rabbit divided into two groups, each one consist of 8 animal, the first group (control) injected subcutaneous with normal saline , second group (experiment) injected subcutaneous with *Moringa olifera* alcoholic seed extract in dose 200 mg /Kg/ day for 30 days according to the safety dose by (Hisham *et al.* ,2012) when use *Moringa olifera* leaves which is has the same result with the LD50 that do in this experiment when use *Moringa olifera* seed alcoholic seed extract .

**Preparation of seed extract**

The extract prepared according to the method of (Babu *et al*.2003 ) by take 50g of moringa seed and remove the shield on it and lets it dry in temperature 37c$^{o}$ for 4h, there after seed grinded and tack weight 50g, put in

cellulose tube call (Thumb), put the thumb in soxhlets and added 300ml of ethanol to the soxhlets, The period of extraction was 4h, then the solvent was evaporated under controlled temperature. By put the mixture in rotary Vacuum evaporation, appropriate weights of the residue were prepared to obtain the concentration that used for this study (200mg/Kg subcutaneous S/C).

**Blood collecting**

At the end of the experiment blood samples were collected from experimental and control animal through the heart puncture directly in to set well labeled sterile tubes containing EDTA for hematological examinations. Another set tubes without EDTA was also used to collect blood, immediately covered and leave in room temperature for Coagulation and then centrifuged to separated Serum out, decanted, deep frozen for serum biochemical analysis such as total cholesterol, HDL(high density lipoprotein ), LDL (Low density lipoprotein), vLDL (very Low density lipoprotein) and Triglyceride. as according to Ewuola and Egbunike (2008).

**Statistical Analysis**

All recorded data were analyzed for ANOVA II (Steal and Torrie,1980) using complete Randomized design (CRD) using computer packaged program (SPSS 2009). Least significant differences (LSD), was calculated to compare the significant differences between means of treatments . This data were expressed as mean ±S.E. (stander Error).

## RESULTS AND DISCUSSION

Table 1 showed significant ($P \leq 0.05$) effects of alcoholic extract of moringa seeds on lipid profile by increase in levels of total cholesterol, HDL(high density lipoprotein ), LDL (Low density lipoprotein), and significant ($P \leq 0.05$) reduce in level of each of vLDL (very Low density lipoprotein) and Triglyceride. Increase in serum HDL is a desirable criteria of an ideal hypocholesterolaemic agent because it contributes to decrease incidence of atherosclerosis.( Mehta, *et al*. 2003).

These data disagree with the result of (Guevara *et al*., 1999) who indicate that the oral administration of *M. oleifera* seed meal during 120 days diminished the body total cholesterol with reduction of atherogenic index. β-sitosterol, a

naturally occurring sterol with serum cholesterol lowering properties, is found in seeds of hybrid varieties of *M. oleifera*. Therefore, β-sitosterol may be a bioactive phytoconstituent of his plant (Saluja *et al*., 1978).

**Table 1: Effects of *M. olifera* alcoholic seeds extract on serum lipid profile in female rabbits (mean ±S.E)**

| group | Cholesterol (mg/dl) | HDL (mg/dl) | LDL (mg/dl) | VLDL (mg/dl) | Triglyceride (mg/dl) |
|---|---|---|---|---|---|
| **Control 0 day** | 72.36A ±2.42 | 20.10A ±4.67 | 24.85A ±3.32 | 15.85A ±9.93 | 79.25A ±4.96 |
| **Control 30 day** | 74.56A ±3.56 | 24.00A ±3.46 | 29.32A ±2.73 | 15.25A ±5.99 | 76.25A ±2.99 |
| **Treatment 0day** | 71.66A ±4.50 | 24.66A ±2.93 | 32.26A ±7.01 | 16.86A ±5.13 | 75.33A ±2.67 |
| **Treatment 30 day** | 90.66B ±2.88 | 36.86B ±7.27 | 47.33B ±6.73 | 3.13B ±0.64 | 15.66B ±3.21 |

N=8 anima * different letters mean significant differences $p \leq 0.05$

Table 2 showed significant effects of the extract on the blood parameters ($P \leq 0.05$) by increase the MCH and MCHC as indicator of size of the red blood cells and the changes occur on red cell size, and significant increased($P \leq 0.05$) in platelet count while there was insignificant change in total red blood cell, hemoglobin and PCV (packed cell volume).

This agreement with Hewltt *et al*., (1989); David *et al*.,( 2002) result that showed no change in blood parameters except increase in platelet count in rabbits and mice due to used moringa . also the results of study agree with Hisham *et al* (2012) study which showed significant increase in the MCHC and platelet count in rabbit and mice.

Dorga and Tandon, (1975); Booth and Wickens, (1988) recorded that the moringa contain a lot of vitamins like Vit. A, B complex ($B_1$, $B_3$, $B_6$ and $B_7$), C, D, E and K that improve body activity when administrated .

**Table 2: Effects of *M. olifera* alcoholic seeds extract on some blood parameters in female rabbits(means±S.E)**

| group | RBC ($x10^6/mm^3$) | HB (g/dl) | MCV (fl) | MCH (Pq) | MCHC (g/dl) | PCV (%) | PLT ($x10^6/mm^3$) |
|---|---|---|---|---|---|---|---|
| **Control 0day** | 6.23A ±0.65 | 126.00A ±14.44 | 67.22A ±3.23 | 20.15A ±0.65 | 300.50A ±5.19 | 41.85A ±4.67 | 190.91A ±11.15 |
| **Control 30 day** | 6.00A ±0.64 | 124.50A ±14.20 | 69.90A ±4.18 | 20.70A ±0.91 | 297.00A ±5.83 | 40.55A ±3.77 | 193.50A ±21.00 |
| **Treatment 0 day** | 5.74A ±0.28 | 118.33A ±5.77 | 73.56A ±4.50 | 21.50A ±0.43 | 289.83A ±0.28 | 40.56A ±2.21 | 197.00A ±4.58 |
| **Treatment 30 day** | 5.39A ±0.61 | 127.00A ±12.49 | 75.86A ±11.9 | 23.53B ±1.41 | 311.33B ±15.01 | 40.80A ±4.13 | 358.33B ±33.12 |

N=8 anima * different letters mean significant differences $p \leq 0.05$

Table 3 there was significant ($p \leq 0.05$) increase in the WBC count and also increase in number of Lymphocyte, monocyte due to administration of moringa alcoholic extract while there was no significant effects on the granules WBC cell this may refer to the role of moringa in support the immune system of the body against different infection (Jaiswal *et al.*, 2009). This agree with Sreelatha and Padma, (2009) who found that the moringa plant treatment effects in improve antioxidant enzyms activity and reduce the free radical roots.

Also this data was agree with results of Isitua and Ibeh, (2013) who found there was increase in the lymphocyte (lymphocytosis) which due to increase the immune response of the rabbit to moringa extract. The increase in the lymphocyte give indicated that the extract incrase the animal activity to defense against the infection.Accordingly the moringa extract may be consider as antimicrobial agent (Fudenberg *et al*.1976) .

Imboden, (1988) and Santos *et al*., (2005). refered to that the moringa extract have immunologica, effects through increase the WBC efficacy by its contain of lactins which work on amplifier the immunity and the immune properties.

**Table 3: Effects of *M. olifera* alcoholic seeds extract on total WBC count and there types of leucocytes in female rabbits blood.(mean±S.E)**

| group | WBC ($x10^3/mm^3$) | Lymphocyte ($x10^3/mm^3$) | Granulocyte ($x10^3/mm^3$) | Monocyte ($x10^3/mm^3$) |
|---|---|---|---|---|
| **Control 0 day** | 4.60A ±1.30 | 2.37A ±0.56 | 1.87A ±0.47 | 0.58A ±0.27 |
| **Control 30 day** | 5.02A ±0.97 | 2.42A ±0.47 | 1.42A ±0.71 | 0.38A ±0.06 |
| **Treatment 0day** | 5.63A ±1.76 | 2.36A ±0.55 | 1.86A ±0.81 | 0.36A ±0.05 |
| **Treatment 30 day** | 8.62B ±2.37 | 4.30B ±0.70 | 2.46A ±0.56 | 1.83B ±0.65 |

N=8 anima * different letters mean significant differences $p \leq 0.05$

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## تأثير المستخلص الكحولي لبذور نبات المورينجا *Moringa olifera* على بعض المعايير الدمية ومستوى دهون الدم في إناث الأرانب المحلية

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**المستخلص**

هدفت هذه الدراسة إيجاد تأثير المستخلص الكحولي لبذور نبات المورينجا على بعض المعايير الدموية ومستويات دهون الدم في إناث دم الأرانب. استخدام في هذه الدراسة 16 أنثى أرنب قسمت إلى مجموعتين متساويتين( 8أرانب /مجموعة ) حقنت الأولى بمحلول الفسلجي (normal saline) في حين حقنت المجموعة الثانية بـ 200 ملغم / كغم/ يوم من المستخلص تحت الجلد لمدة 30 يوم. تم سحب الدم لقياس المعايير الدمية ومستوى دهون الدم. أظهرت النتائج تأثيرا معنويا ($P\leq0.05$) للمستخلص الكحولي للمورينجا في زيادة كل من مستوى الكولسترول الكلي وكذلك البروتينات الدهنية عالية الكثافة والواطئة الكثافة وكل من كمية وتركيز الهيموغلوبين بالكريات MCHC, MCH والصفيحات الدموية وكذلك كريات الدم البيضاء والخلايا اللمفاوية وأحادية النواة وانخفاض معنوي($P\leq0.05$) لكل من البروتينات الواطئة الكثافة جدا والدهون الثلاثية.

**الكلمات المفتاحيه :** المرينجا ، الصفات الدمية والكيمياحيوية ، إناث الأرانب.