The 7th international- 21th Arabic conference for Home Economics "Home Economics and sustainable development2030" December 15th, 2020

http://homeEcon.menofia.edu.eg

Journal of Home Economics

ISSN 1110-2578

Effect of Different Levels of *Molina* (*Lagenariasiceraria)*on the Healthy Status of Rats with Anemia

Mohamed Mostafa , Nehad R. El Tahan , Asmaa Ragab Shebil Ali

Nutrition and Food Science Dept.,Facultyof Home Economics, Menoufia University, Egypt.

Abstract:

The potential health benefits of *molina*as functional food supplement to improve iron absorption as well as to prevent and treat anemia associated with deficiency in iron intake were evaluated in rats. Three experimental groups were fed diet supplemented with different levels of Molina for 4 weeks versus the control rat group fed basal diet free in iron .At the end of the experiment, rat groups fed levels of molinasupplemented diets were characterized by significant dose-related increases in the level of serum Fe (69.11 ± 4.55 to 84.3 ± 2.12 µg/dl). In addition, there were variable increases in the measured levels of hemoglobin (11.11 ± 1.1 to 14.25 ± 1.1 g/L), hematocrit (39.15 ± 0.15 to 42.15 ± 1.27 %) and ferritin (49.55 ± 2.25 to 65.12 ± 0.15 µg/dl) in levels of tested plantfed groups in a dose-dependent fashion compared with the control group. These data suggested that 10% of molina could provide with iron absorption and bioavailability of iron when incorporated in daily diets and therefore, could be considered as a very effective food supplement to prevent and treat anemia.

Key Words: Ascorbic acid, *Lagenariasiceraria*and iron absorption.

Introduction

Iron-deficiency anemia isa global nutritional problem occurring as a complication of nutritional and absorption disorders and is observed frequently over ages

(Makrides*et al.*, 2003). Shortage in dietary iron intake or absorption represents the major risk factor of the incidence of iron-

deficiency anemia . Iron-deficiency has been strongly related with many human diseases including immune disorders

(Kim *et al*., 2002), chronic inflammation, restriction of physical performance , neurological impairment and cognitive deficits **(Kriger and Schroeder, 2001*).***

Molina (*L. siceraria*) (Family *Cucurbitaceae*) is a climber or trailer of Asian and African origin with subglobose ellipsoid or lageniform fruit . The plant is cultivated for its fruit, which is used as vegetable . It has highly rich ethnomedicine and is recognized to have cardiotonic,hepatotonic, anti-hyperglycemic,
and antihyperlipidemic properties . The fruit has also been exhibited to possess fibrinolytic , antithrombotic , and anti-atherosclerotic activities **(Ahmed and Fatima, 2014**) . Antioxidant properties of the fruit have been studied in detail demonstrating it having remarkable antioxidative and free radical scavenging potential . It possesses considerable anti-microbial properties against a number of microorganisms . It has also been shown to possess antihyperlipidemic properties in animal models **(Ghule*et al*., 2016)**
Molina hasbeen found to contain ascorbic acid, caffeoylquinic acid, cucurbitacins, pectin, *β*-carotene, iso-fucosterol, campesterol, spinasterol, kaempferol, palmitic acid, oleanolic acid, linoleic acid, quercetin and iso-quercetin**(Malik *et al*., 2017)**. Therefore the present work wasdesigned to study the effects of different levels of 94olina onsome biologicaland biochemical parameters of anemic rats.

Materials and Methods

Molina fruits were obtained from the local market, Cairo, Egypt. All chemicals and diagnostic kits were purchased from El-Gomhoria for trading Drugs,chenials and medials this tramety Co., Cairo, Egypt.

Preparation of the tested material: fruits were dried at 40 ºC for three days and ground into fine powder by using electric grindersiveiu, in80mg and kept in dark ,stoppered glass bottles in a cool and dry location till use according to **Russo (2001)**

Experimental animals: This study was carried out on twenty four adult male Sprague Dawley albino rats weighing155± 5 g body weight(6rats in each group). The rats were obtained fromLaboratory Animal Colony, Helwan, Egypt. Rats were kept for one weekfor acclimatization to the laboratory conditions,and fed on basal diet and provided with water and food ad -libitum.

Basal diet (AIN-93M) was prepared according to **Reeves *et al*. (1993)**, Anemic diet which was used free in iron and vitamin C as reported by **Schermer(1967).**Different levels of Molina fruit (5, 10 and 15%)were addedwhich substituted from the amount of corn starch.

Experimental design: Rats were divided into four groups consisting of six rats per each. The groups were fed on anemic diet during the experimental period. After 28 days that was required to induce anemia as stated by **Schermer(1967).** the first group was left as a control group, while the rest were given daily 5, 10 and 15% molina . During the experiment period, the feed intake were determined daily and body of rats weight were weighed once aweek. Body Weight Gain (BWG) and Feed Efficiency Ratio (FER) were calculated at the end of the experimental period such as mentiond in**Chapman*et al*., (1959)**according tothe following equations:

BWG (g) = final weight (g) - initial weight (g)
FER = weight gain (g)/feed intake (g)

Collection of blood samples: At the end ofthe experimental period, rats were sacrificedfastel following a12 h fast sacrificed. The rats were lightly anaesthetized by dietiy ether and about 7 ml of blood was withdrawn from the hepaticportal vein into dry centrifuge plastic tubes. Bloodsamples were centrifuged for 20 min at 3000 rpm toseparate the serum samples which were kept in tubesat -20 C till biochemical analysis **(Drury and Wallington 1980).**

Analysis methods: Serum total cholesterol was calorimetrically determined according to **Allain*et al*. (1974)** and triglyceride wasdetermined calorimetrically according to **Wahlefeld(1974**). High Density Lipoprotein cholesterol (HDL-c) was determined calorimetrically according to **Richmond(1973).** Low Density Lipoprotein cholesterol (LDL-c) andVery Low Density Lipoprotein cholesterol (VLDL-c) werecalculated mathematically according to **Friedewald*et al.* (1972)**as follow:

LDL-c = TC-[HDL-c + (TG/5)]
VLDL-c = Triglycerides/5

The activity of aspartate aminotransferases (AST) and alanine aminotransferases (ALT) enzymes wereassigned by the method of **Bergmeyer*and Harder,(1986).***

Blood was collected by tail venous puncture every week at the end of the experimental. Hemoglobin was determined according to**Drabkin, (1949).** Hematocrit was measured using a heparinized tube according to**Mc-Inory procedure (1954).** Using the serumsamples obtained on the final day of the experiment, serumand total iron binding capacity (TIBC) were determined bymeans of commercial assay kits (Sigma Diagnostic, St. Louis) according to **Cavill's*et al.*, (1986***)*.* Hemoglobin regenerationefficiency (HRE) were calculated according to the method and equations of ***Miller (1982)*** as follow:
Hemoglobin Regeneration Efficiency (HRE) =

{Hb-Fe (mol)} at the end of each period – {Hb-Fe (mol)} at the beginning of each period / mol Fe consumed.
Statistical analysis according to: **Snedecor and Cochran (1986).**

Results

Effect of different levels of molina on feed intake (FI), body weight gain (BWG), and feed efficiency ratio (FER) in anemic rats.

According to the FI results showed that there were significant differences (pit 0.05)between anemic rats fed on10and5% of plant and (15% and control group).

Anemic group fed on 10%was higher significantily($p \leq .0.05$) than other groups followed by 5%,15% and control group.

Table 1: Effect of different levels of molina on feed intake (FI), body weight gain (BWG), and feed efficiency ratio (FER) in anemic rats.

Groups	Anemic control group	Anemic group fed on 5% molina powder	Anemic group fed on 10% molina powder	Anemic group fed on 15% Molina powder
FI (g/day)	10.07 ± 0.03^{c}	11.10 ± 0.83^{b}	12.29 ± 1.42^{a}	10.97 ± 1.05^{c}
BWG (g/day)	$0.95\ \pm0.12^{c}$	1.06 ± 0.07^{b}	1.48 ± 0.27^{a}	1.01 ± 0.17^{b}
FER	0.094 ± 0.014^{b}	0.095 ± 0.002^{b}	0.120 ± 0.012^{a}	0.092 ± 0.008^{b}

Values are mean±SD. Values in the same row sharing the same superscript letters are not statistically significantly different

Effect of different levels of molina on serum lipids parameters (mg/dl) in anemic rats.

Administration of molina powder of molina at 10% and 15% caused significant decreases in serum levels of total cholesterolTc, LDL-c and VLDL-c compared to control group (Table 2). Serum HDL-c levels increased significantly by the fed of molina at 15%. Anemic rats that were given molina at 10 and 15 % showed significantly lower levels of VLDL-c compared to control group.

Table 2: Effect of different levels of molina on serum lipids parameters (mg/dl)in anemic rats.

Groups	Anemic control group	Anemic group fed on 5% molina powder	Anemic group fed on 10% molina powder	Anemic group fed on 15% molina powder
TC	160.20 ± 9.23^{a}	135.00 ± 4.08^{b}	120.60 ± 4.39^{c}	110.33 ± 5.03^{d}
TG	112.60 ± 6.95^{a}	90.00 ± 4.08^{b}	83.60 ± 4.67^{c}	82.67 ± 2.52^{c}
HDL	28.36 ± 5.57^{c}	34.85 ± 3.06^{b}	32.40 ± 1.82^{b}	40.67 ± 5.51^{a}
LDL- c	109.32 ± 9.83^{a}	82.15 ± 6.84^{b}	66.48 ± 6.22^{c}	53.13 ± 5.76^{d}
VLDL- c	22.52 ± 1.39^{a}	18.00 ± 0.82^{b}	16.72 ± 0.93^{b}	16.53 ± 0.50^{b}

Values are mean±SD. Values in the same row sharing the same superscript letters are not statistically significantly different

Effect of different levels of molina on AST and ALT parameters (mg/dl) in anemic rats.

Concerning of lipid profiles results in table (2) showed that there were significant decreased in values of TC.TG ,LDLand VLDL when the ratio of substitution increased, the values of mean ±SD were160.20±9.23,135.00±4.08,120.60±4.39and110.33±5.03for TC.112.60±6.95,90.00±4.08,83.60±4.67and82.67±2.52for TG.28.36±5.57,34.85±3.06,32.40±1.82and40.67±5.51for HDL.109.32±9.83,82.15±6.84,66.48±6.22and53.13±5.76forLDL-c .22.52±1.39,18.00±0.82,16.72±0.93and16.53±0.50forVLDL-c.respectively.while serum HDL was increased significantly(pit0.05) when substituation increased,with 28.36±5.57 ,34.85±3.06, 32.40±1.82and40.67±5.51respectively.

Table 3: Effect of different levels of molina on AST and ALT parameters (mg/dl) in anemic rats.

Groups	Anemic control group	Anemic group fed on 5% molina powder	Anemic group fed on 10% molina powder	Anemic group fed on 15% molina powder
AST	108.2± 9.76[a]	93.33±5.50[b]	86.00±1.01[c]	46.01±1.01[c]
ALT	63.80±8.43[a]	57.00±2.65[b]	54.20±3.89[d]	36.60±2.51[d]

Values are mean±SD. Values in the same row sharing the same superscript letters are not statistically significantly different

Effect of different levels of molina on Serum iron concentration and hemoglobin indices in anemic rats.

Data shown in Table (4) serum iron were significantly (P<0.05) increased as affected bydifferent levels of molinaintake (5, 10 and 15%),the values of iron were 76.3±2.1,80.25±4.1 and 84.3±2.12 µg/dl respectively . In addition, all serum levels of hemoglobin were also elevated in the range of 12.35±1.11, 13.15±2.36 and 14.25±1.1 g/L respectively. While, ferritin was increased in the range of 57.10±0.36, 62.3±0.1 and 65.12±0.15µg/L respectively. Hemoglobin regeneration efficiency (HRE) was increased at the range of 0.15±0.05, 0.17±0.02 and 0.19± 0.01. Hematocrit was increased at the ranges of 31.11±1.3,37.17±2.11 and 42.15±1.27% in the experimental rats fed 5, 10 and 15 % respectively. Hemoglobin regeneration efficiency (HRE) in the molinafed rats was significantly higher than that of the control rat group while, total iron binding capacity (TIBC) in the fruit-fed rats was significantly lower than that of the control rat group.

Table 4: Effect of different levels of molina on Serum iron concentration and hemoglobin indices in anemic rats.

Serum Profile	Anemic control group	Anemic group fed on 5% fruit powder	Anemic group fed on 10% fruit powder	Anemic group fed on 15% fruit powder
Serum Fe (µg/dl)	59.11 ± 4.55 ^{d}	76.30 ± 2.10^{a}	80.25 ± 4.10^{b}	84.30 ± 2.12^{c}
HRE[1]	0.12 ± 0.01 ^{d}	0.15 ± 0.05^{c}	0.17 ± 0.02^{b}	0.19 ± 0.01^{a}
Serum ferritin (µg/L)	49.55 ± 2.25 ^{d}	57.10 ± 0.36^{c}	62.30 ± 0.10^{b}	65.12 ± 0.15^{a}
TIBC (µg/dl)[2]	345.10 ± 6.20 ^{a}	339.5± 33.50^{b}	330.6 ± 25.55^{c}	321.7 ± 10.50 ^{d}
Hemoglobin (g/L)	10.11 ± 1.10 ^{c}	12.35 ± 1.11^{b}	13.15 ± 2.36^{b}	14.25 ± 1.10^{a}
Hematocrite (%)	29.15 ± 0.15 ^{d}	31.11± 2.11^{c}	37.17 ± 2.11^{b}	42.15 ± 1.27 ^{a}

Values are mean±SD. Values in the same row sharing the same superscript letters are not statistically significantly different HRE[1]: Hemoglobin regeneration efficiency, TIBC[2]: total iron-binding capacity.

Discussion

Anemia is considered as one of the most common index of malnutrition over the world and is caused by iron deficiency store or iron-deficiency erythropoiesis based on the screening criteria for iron-deficiency anemia (**Lin *et al.*,2003).**

In this study, the primary cause of anemia wasconsidered to be the feeding on iron-deficient diet (malnutrition) for a long period (4 weeks) through the adaptation feeding course before incorporation of Molina together with normal load of iron and calcium into the experiment diets. The hemoglobin concentration decreased constantly during the feedingperiod of iron-free diets in all the rat groups. It was evident that iron deficiency contributed to thisanemia, because typical signs of iron-deficiency anemia suchas decreases in hemoglobin and serum iron concentrations, andincreases in total iron binding capacity wereobserved (**Baynes and Bothwell 1990).**

Several studies have shown that molina contains considerable amounts of important compounds which may serve as antioxidants. For example, **Ahmed and Fatima, (2014)** reported that molina had high content of phenolics compounds (48.1mg/g), flavonoids (6.23 mg/g) and carotenoids (0.32 mg/g). Furthermore, ***Ghule et al. (2016)*** found that molina fruit extract contain considerable amounts of total phenolics compounds and have antioxidant activity and free radical-scavenging capacity. It is well-known from the literature that the main active compounds of molina fruit extract are inulin and fructooligosaccharides. Inulin is a polymer of fructose with ß-(2-1) glycosidic linkages. As it is water soluble and nothydrolysed by human digestive enzymes, it behaves likea soluble fiber. It may increase the viscosity of the stomach content, which can slow down the rate of gastric emptying of water, nutrients and lipids, or it can cause alterations in hormone secretions, which affect lipid metabolism. The observed effect of Molina on food intake and body weight in this study was agreed with that reported by **Malik *et al.* (2017)** that the addition of oligofructose; a shortchainfructans obtained from chicory inulin; might enhance satiety, thereby resulting in greater reductions in energy intake and protects against the body weight gain, fat mass development in normal and obese rats. The effect of molina fruit and seed on feed intake and body weight could be attributed to the presence of inulin-type fructans of molina fruit.

In accordance with the present results, ***Ghule et al.*, 2016** reported that molina fruit improve lipid profiles by lowering plasma total cholesterol and triglyceride concentrations . The hypocholesterolemic effect of fruit could be attributed to presence of isoflavones which prevent intestinal absorption of cholesterol by competition for its absorption sites . The potent hypercholesterolemic and hypotriglyceridemic effects of fruit could be due to the presence of inulin which behaves like a soluble fiber and possesses hypolipidemic effect . On the other hand, serum total cholesterol and triglyceride concentrations were not significantly affected by molina seed feeding. The difference in the cholesterolemic effect of similar dietary fibers among different studies may be due to the percentage of added dietary cholesterol, the presence or absence of cholic acid, the level of dietary fiber and species.

The observed elevation of ALT and AST in anemic rats. Moreover, **Clark *et al*. (2003)** reported that decrease the iron is commonly associated with long term elevations in liver enzymes. The reduction in the serum levels of aminotransferases as a result of Molina administration during the present study might probably be due in part to the presence of isoflavones, polyphenols and other antioxidants as mentioned before which aided in reducing the liver injury induced by anemia. The water soluble antioxidant properties of
Molina was investigated by **Malik *et al*. (2017)** and evaluated in *vitro* and in ex *vivo* as protectiveactivity against rat liver cell microsome lipid peroxidation.Moreover, reduced fat cells in the liver as a result of reducing body weight may also improve liver function. **Ahmed *et al*. (2003)** concluded that Molina has antihepatotoxic effect and significantly lowers serum levels of AST and ALT enzymes even in CCL4 intoxicated rats.

Several authors have reported that iron mal-absorption is mainly caused by some of the food constituents which can be inhibitors of iron absorption and may contribute to the high prevalence of iron deficiency found.Data indicate that Molina feeding prevented the development of anemia and improved hemoglobin, the hematocrit and both serum iron contents. The final hemoglobin concentration and hematocrit in the ratsfed molina were significantly higher than those in the rats fed the control diet. Serum iron and HRE also significantlyincreased after

Molina fruit. It has been reportedthat there was a high positive correlation between serum iron concentrationand iron absorption **Buchowski*et al*. (1989)**also reported a correlation betweenHRE and apparent absorption of iron. Feeding Molina -containingdiet appears to increases in total iron binding capacity as shown in obtained results. It seems that the effect of the ingested doses of molina were enough to stimulate iron absorption in the experimental rat groups with significant (P<0.05) different effect according to the ingested dose.

In the present study,Molina was used,which is a water-insoluble compound, as the iron source of theexperimental diets. In this case Molina feeding is highly suggested to decreasethe pH of the cecal contents and therefore increases the iron concentrationin the soluble fraction of the cecal contents. The mechanism of iron absorptionvia not only the small intestine, but also via the large intestinehas not yet been clarified **(Ohta*et al.;* 1997).** However, sufficient iron is absorbedvia the large intestine for recovery from iron-deficiency anemiain rats **Ebihara& Okano 1995)**. Therefore,this study speculate that the effect of the tested molina in increasing the absorptionof iron takes place in the large intestine in rats.

In conclusion, The observed improvements may be revealed to the presence of many antioxidant components found in molina fruit. On the basis of the present results, it could conclude that molina especially at 20% may have synergistic effect and its intake of be useful for treating obesity as it reduces feed intake and body weight, improves serum lipid profile, liver function and thyroid activity in obese rats.

References

Allain, C.C. (1974): Cholesterol enzymatic colorimetric method. J. Clin. Chem., (20): 470.

Ahmed, B.; Al-Howiriny, T.A. andSiddiqui, A.B. (2003): Antihepatotoxic activity of seeds of molina. J. Ethnopharmacol., 87: 237-240.

Ahmed, D.;Fatima, M. and Saeed, S. (2014): Phenolic and flavonoid contents and anti-oxidative potential of epicarp and mesocarp of Lagenariasiceraria fruit: A comparative study.Asian Pac. J. Trop. Med., 7 (1) : S249-S255

Baynes, R. D. and Bothwell, T. H. (1990): Iron deficiency. Annu. Rev. Nutr. 10:133-148

Bergmeryer,H.andHarder,M.(1986) A colorimetric method of the determination of serum glutamic oxaloacetic and glutamic pyruvic transminas clin.Biochem.,24:28-34.

Buchowski, M. S.; Mahoney, A. W. and Kalpalathika, M. P. V. (1989): Nonheme iron absorption, apparent iron absorption and hemoglobin regeneration efficiency in anemic and normal rats fed with dietary heme and nonheme iron at various levels. Nutr. Res. 9:773-783

Cavill, I.; Jacobs, A. and Worwood, M. (1986): Diagnostic methods for iron status. Annu. Clin. Biochem. 23, 168.

Clark, J.M.; Brancati, F.L. and Diehl, A.M. (2003): The prevalence and etiology of elevated aminotransferase levels in the United States. Am. J. Gastroenterol., 98: 960-967.

Chapman,D.G.; Castilla, R.andCampbell,J.A.(1959):Evaluation of protein in food .LA.Method for determination of protein efficiency ratio.Can .J. Biochem.physiol, 37:679-686.

Drabkin, D. L. (1949): The standardization of hemoglobin measurement. Am. J. Med. Sci. 217-710

Drury,R.A.,andwallingten,E.A(1980): Carlton's Histological Technique-5th the Oxford University.

Ebihara, K. and Okano, J. (1995): Comparison of bioavailability and hemoglobin repletion of ferric and ferrous iron infused into the cecum in anemic rats. Nutr. Res. 15:889-897

Friedewald ,WT.; Levy, RI.; and Fredrickson,DS. (1972): cholesterol in plasma, without use of the preparative ultracentrifuge. Jun.,18(6):499-502

Ghule, B.V.; Ghante, M.H.; Upganlawar, A.B. and Yeole P.G. (2016):Analgesic and anti-inflammatory activities of L. siceraria (Mol) Stand. fruit juice extract in rats and mice. Pharmacognosy Magazine, 2:232

Kim, S. h.; Kim, H. Y.; Kim, W. K. and Park, O. J. (2002): Nutritional status, iron-deficiency-related indices, and immunity of female atheletes. Nutrition 18(1): 86-90.

Kriger, J. and Schroder, C. (2001): Iron, brain and restless leg syndrome. Sleep Med. Rev. 5 (4): 277-286.

Lin XM, Wang Z, Shen XY, Long Z, Liu WJ, Guo YM, Tang Y. (2003): Iron status and effect of early iron supplementation on sub-clinical iron deficiency in rural school-age children from mountainous areas of Beijing (China). Zhonghua Yu Fang Yi XueZaZhi. 37(2):115-8

Makrides, M.; Crowther, C. A.; Gibson, R. A.; Gibson, R. S. and Skeaff, C. M. (2003): Efficacy and tolerability of low-dose iron supplements during pregnancy: a randomized controlled trial. Am. J. Clin. Nutr. 78(1):145-53.

Malik, A.H. ; Khuroo, A.A. and Khan, Z.S. (2017): Ethnomedicinal uses of some plants in the Kashmir Himalaya. Indian J. Trad. Knowl., 10 (2):362-366.

Miller, J. (1982): Assessment of dietary iron availability by rat Hb repletion assay. Nutr. Rep. Int.26:993-1005.

Ohta, A.; Baba, S.; Ohtsuki, M.; Takizawa, T.; Adachi, T. and Hara, H. (1997): In vivo absorption of calcium carbonate and magnesium oxide from the large intestine in rats. J. Nutr. Sci. Vitaminol. 43:35-46

Reeves, P. G.; Nielsen, F. H. and Fahey, G. C. (1993): AIN-93 purified diets for laboratory rodents: final report of the American Institute of Nutrition ad hoc writing committee on the reformulation of the AIN-76A rodent diet. J. Nutr. 123:1939-1951

Richmond, N. (1973): Colorimetric determination of total cholesterol and high density. lipoprotein cholesterol (HDL-c). Clin. Chem., 19: 1350-1356 5, pp: 1831-1835

Russo, E. (2001): "Hand book of Psychotropic Herbs A scientific Analysis of Herbal Remedies for Psychiatric conditions". The Howrth Herbal press, Inc.

Schermer (1967): The Blood Morphology of Laboratory Animal Longmans, printed in Great Britain. Green. And Co. Ltd,PP.350.

Snedecor, G.W. and Cochran, W.G. (1986): Statistical Methods. 4th Ed. Iowa State University Press, Ames, Iowa, USA, pp: 91

Wahlefeld, A.W. (1974): Methods of enzymatic analysis, Academic Press, Chapter5, pp: 1831-1835.

Journal of Home Economics

المؤتمر الدولى السابع- العربى الحادى والعشرون للإقتصاد المنزلى
" الإقتصاد المنزلى والتنمية المستدامة ٢٠٣٠ "
١٥ ديسمبر٢٠٢٠م

http://homeEcon.menofia.edu.eg ISSN 1110-2578

تأثير المستويات المختلفة من اليقطين على الحالة الصحية للفئران المصابة بالأنيميا

محمد مصطفى السيد ، نهاد رشادالطحان، اسماء رجب شبل على
قسم التغذية وعلوم الاطعمة،كلية الاقتصاد المنزلى،جامعة المنوفية،مصر

الملخص العربى

تم تقييم الدور العلاجىوالوقائى لليقطين للأنيميا المصاحبة بنقص الحديد كغذاء وظيفى تم تغذيه ثلاث مجاميع تجريبيه علي الفئران بنظام غذائي بمستويات مختلفة من ثمره اليقطين لمده اربع اسابيع مع وجود مجموعه الضابطة التي تعتمد في غذائها علي وجبة خالية من الحديد وقد لاحظ انه في نهايةالتجربة ان مجموعة الفئران التي اعتمدت في غذائها علي وجبات غذائية مدعمه باليقطين

(٤.٥٥ ± ٦٩.١١ إلى ٢.١٢ ± ٨٣.٣ ملجرام) وجود زياده في مستوي الحديد بمعدل الإضافة الي انه عند قياس مستوي الهيموجلوبين وجد زيادة نسبته (١.١ ± ١١.١١ إلى ١.١ ± ١٤.٢٥ جرام)

والهيماتوكريت: (٠.١٥ ± ٣٩.١٥ إلى ١.٢٧ ± ٤٢.١٥%)

والفيريتيين: (٢.٢٥ ± ٤٩.٥٥ إلى ٠.١٥ ± ٦٥.١٢ ملجرام)

وذللك مقارنة مع مجموعة الضابطة .وقدوجد ان ١٠% من اليقطين يزيد امتصاص الحديد في الوجبات الغذائيةاليومية ولذللك يمكن تدعيم الغذاء به لمنع وعلاج فقر الدم.

الكلمات المفتاحية: اليقطين , امتصاص الحديد فيتامين سي, انيميا.