

Research article

**The role of beta vulgaris (beetroot) in hemoglobin (Hb) elevating in patients with Anemia due to iron deficiency**

Wejdan M. kadhemi<sup>1</sup>

Hanaa Enaya<sup>1</sup>

Arshed S. kadhomi<sup>2</sup>

<sup>1</sup>Department of biology, College of Education, University of Al-Qadisiyah, Iraq.

<sup>2</sup>College of Medicine, University of Al-Qadisiyah, Iraq.

(Received 24/8/2017, Accepted 26/12/2017)

**Abstract**

*The human life interesting is the main important of world health care. The plant family has vigorous of natural element and chemical compounds that can use greatly in medicine and other applications. This study involved used the beetroots for elevated the hemoglobin percentage in adult patients suffering with anemia that resulting from iron deficiency .Because the Beta vulgaris provides B-complex vitamins and minerals ex. potassium, copper and magnesium. This study sample composed of (34) patients who randomly distributed to three unequal groups (man – women – control).The results showed significant ( $P < 0.05$ ) with RBC, Hb and PCV elevating in all patients and woman have increasing more than men.*

**Keywords: Anemia, Beta vulgaris, Iron deficiency.**

**Introduction**

when you have less than the normal of red blood corpuscles count (RBCs) Anemia called iron poor blood occurs in your blood or when the hemoglobin (Hb) concentration in RBCs don't sufficient. Hemoglobin is a protein, its transport oxygen from lungs to whole body, the functional incapability to supply enough oxygen to all parts of body so you have anemia, your blood, addition to their different organs and tissues cannot work properly in case of deprived from oxygen (1). There are three key causes of anemia: blood leak, decreasing of red blood cell creation, and elevate rates of RBCs damage. Many factors may be lead to anemia implicated Pregnancy ,Ulcers ,Colon tumor, deficiency of iron, folic acid, vitamin B12, Blood disorders such as sickle cell anemia and thalassemia, cancer, aplastic anemia, a factor that can be heredity or achieved" (2). When anemia occur, the

symptoms are often blurred and may include feeling fatigue, breath shortness or a lack ability to train. Anemia that occur on sharply often has grand incidents, which may include muddled, obsession like one is going to pass out, lack of hipness, or excess parching. Anemia must be motoring in-patient earlier becomes remarkable pale. Types of anemia can be divide into three elements: blood lack, decrease production of RBCs and that due to increased RBCs damage. Causes of blood loss include trauma and gastrointestinal bleeding, among others ,Causes of decreased production include iron deficiency, a loss of vitamin B12 ,Causes of elevated damage include a number of genetic factors such as sickle cell anemia, infections like malaria, and certain autoimmune diseases (3). The roots and leaves of the beet have been used in popular medicine to medication a wide diverse of illness (4).

Beets are small grassy plants with wide dark-green leaves. Its underground taproot matures in 50-60 days of spreading and weighs about 100-150 grams, the exclusive crimson-red color of red beet is due to betalain coloring, such as betanin and betacyanin” ‘farm beet is very low in calories. Provide only (45 kcal/ 100 g), and contain zero cholesterol and a small amount of fat. Its nutrition welfares come particularly from fiber, vitamins, minerals, and unique plant derived anti-oxidants ‘the root is also a rich source of B-complex vitamins such as niacin B-(3 pantothenic acid B-(5 pyridoxine B-(6 and minerals such as iron, manganese, copper, and magnesium (5).

## Results

Thirty four sample were collected from patients suffering decrease in Hb % anemia in period about six months at Al-Qadisiyah Province thirty samples are patients with anemia (do not have any another disease) have

## Materials and Methods

### Ethical approval

The Animal Ethical Committee of Veterinary Medicine College, University of Al-Qadisiyah, Iraq, has approved the present study under permission No: 445

Blood criteria by using SYSMEX KX 21N (Kobe, Japan)

### Preparation for Beta vulgaris:

The Beta vulgaris roots were cut into small pieces. Put this small pieces in suitable container have amount of water for cooking. After ripened take, it aside until cool, now it is ready to use. The dose of beta vulgaris soap tacked approximately 200 ml daily for ten days. Then make the Hb and P.C.V test.

symptoms light hypotension with dizziness only and four are healthy as control. All samples undergo full history were classified according to name, age, gender and clinical symptoms as in Table (1).

Table (1): showed the distribution of patients according the gender and age.

Gender	Male	8	23.5%	Total percentage 100%
	Female	26	76.5%	
Age /year	(10 -19 )	9	26.5%	Total percentage 100%
	(20 - 29)	14	41%	
	(30 – 39)	7	20.5%	
	≤ 40	4	12%	
Control	Male	2	6 %	Total number with control = 34
	Female	2	6 %	
Mean =26    d.f = 3    S.E= 3				

Table (2): showed the increasing rate in Hb, P.C.V, RBCs and MCHC distribution according the age after taking the beta vulgarism

Age / year	Hb %	P.C.V	RBCs	MCHC
(10 -19 )	1.5	4.5		
(20 - 29)	2	6		
(30 – 39)	1.8	5.4		
≤ 40	1	3		
Male	1.5	4.5	500-780 cell/ μl	5-8 gm/dl
Female	2.5	7.5	710-950 cell/μl	6-9 gm/dl

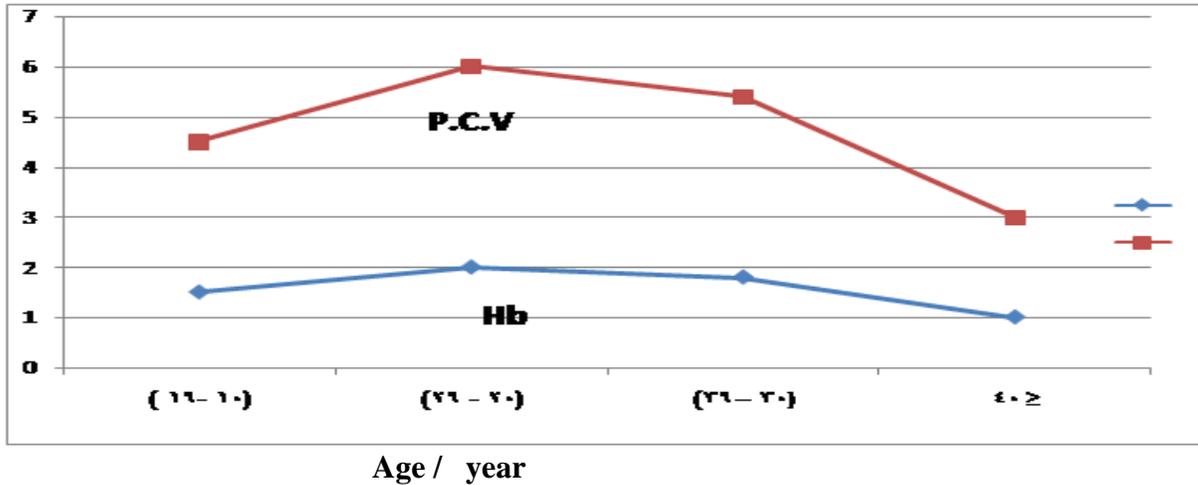


Figure (1): showed the distribution of Hb and P.C.V increasing according the age after taking the beta vulgaris.

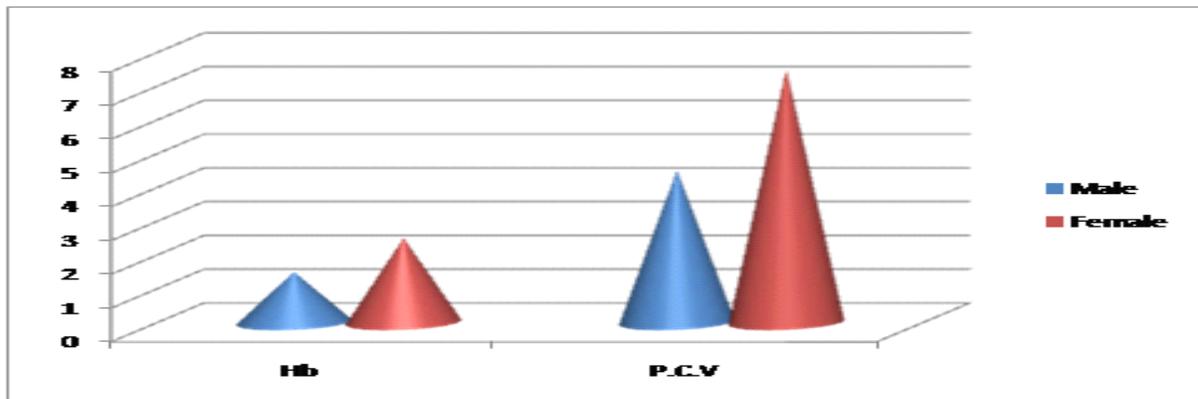


Figure (2) showed the Hb and P.C.V increasing distribution according the gender after taking the beta vulgarism

### Discussion

According the result in Table (1) showed the number of anemia in female (76.5%) was more than male (23.5%) this may be due to in women, iron and RBC cells are lack when bleeding occurs from very heavy and long time, as well as from yeaning. Women also can lose iron and RBC cells from uterine fibroids , which can bleed slowly. This agree with (OWH, 2016) also the women body goes through important mutating when you getting pregnant. The dun of blood in your body elevated by about 20-30 percent, which batteded the supply of iron and vitamins that the body requires to make hemoglobin. Many women loss the ampler amount of iron

required for the second and third trimesters. When your body requires more iron than it has plenteous, you can become anemic this agree with (American society hematology, 2016). This study result showed high percentage patients (41%) in age between (20-29), this may be belong to youngish folks are especially susceptible because of their prompt growth and connected high iron needs, and this age represented the end of adolescent and the start of women reproductive age resulting in boys and girls both required iron for growth during adolescence, and girls have a constantly need to changed iron lack thoroughly menstruation this agree with (8), and agree

with (9) but disagree with (14) Who said Anemia is common in the elderly and its prevalence increases with age . Data in table (2) showed the increasing rate of Hb and PCV in female aging between (20 -29) years old after ten days, when the patients given the beta vulgaris according the researcher opinion. This may be given age reached during teaching and gregarious activities and subsistent locus such as schools and health means may offer prospects to regulate nutrition education and true services to reduce anemia and nutrition hipness and education are especially important. This agree with (10), also female after taken the beta vulgaris dose was increase the appetite, and thus food and energy intake because it have multi essential elements such

as amounts of vitamin-C is one of the powerful natural antioxidants, complementing and afterwards an increasing the weigh because the beets are an startlingly issuer of “folates which contains about 109 µg/100 g of this vitamin and the root is also a rich source of B-complex vitamins such as niacin (B-3), pantothenic acid (B-5), pyridoxine (B-6) and minerals such as iron, manganese, copper, and magnesium” this agree with (11) and the commonalty Hb % difference between male and female relates in vast portion to the erythropoietic impact of testosterone (12, 13). In addition, the table (2) results appeared the rate of RBCs & MCHC were elevated this indicated increasing the iron in blood due to the used of Beta vulgaris by the given patients.

## References

- 1-Charles M, Peterson MD. Director, Division of Blood Diseases and Resources National Heart, Lung and Blood Institute National Institutes of Health Anemia fact. (2016).
- 2-Rockville Pike, Bethesda. 1. U.S. National Library of Medicine 8600, MD 20894 U.S. Department of Health and Human Services National Institutes of Health, (2017).
- 3-Janz TG, Johnson RL, Rubenstein SD. "Anemia in the emergency department: evaluation and treatment.". Emergency medicine practice, (2013).
- 4-Grubben GJH, Denton OA. Plant Resources of Tropical Africa Vegetables. PROTA Foundation, Wageningen; Backhuys, Leiden; CTA, Wageningen. (2004).
- 5-United States Department of Agriculture (November 2015). Agricultural Research Service USDA Food Composition Databases
- 6-The Office on Women's Health (OWH) (2016).The Office of the Assistant Secretary for Health at the U.S. Department of Health and Human Services.
- 7-American society hematology. Helping hematologists conquer blood disease worldwide, (2016).
- 8-Brabin L, BJ Brabin. "The Cost of Successful Adolescent Growth and Development in Girls in Relation to Iron and Vitamin A Status." American Journal of Clinical Nutrition (1992); 55: 955-958.
- 9-Jasmin H, Sallekhana A. International Family Planning Perspectives. The Department of Community Health, (2005).
- 10-Creed-Kanashiro HM Bentley, M Fukumoto, *et al.* "Relationship of Anemia to Dietary Intake and Feeding Patterns in Women of Fertile Age and Adolescent Girls Participating in Community Kitchens in Peri-Urban Lima, Peru." In Improving the Quality of Iron Supplementation Programs. Mother Care Project/USAID/John Snow, Inc. (1997).
- 11-Kanani SJ, Poojara RH. Supplementation with iron and folic acid enhance growth in adolescent Indian girls. J Nutr, (2000); 130:452S-455S.
- 12- Fonseca R, Rajkumar SV, White WL, Tefferi A, Hoagland HC. Anemia after orchietomy. Am J Hematol. Nov. (1998) 59(3):230-3
- 13-Bogdanos J, Karamanolakis D, Milathianakis C. Combined androgen blockade-induced anemia in prostate cancer patients without bone involvement. *Anticancer Res.* Mar-Apr. (2003); 23 (2C):1757-62
- 14-Freedman ML, Sutin DG. Blood disorders and their management in old age. In: Brocklehurst's Textbook of geriatric medicine and gerontology. 5th ed. New York, N.Y.: Churchill Livingstone: (1998); 1247–88.