

Periodic Research

Effect of Pomegranate Juice on Rise of Haemoglobin Level in Own Blood Sample



Neeru Agrawal

Assistant Professor,
Deptt. of Zoology,
Govt. V.Y.T. Auto.P.G. College,
Durg (C.G.)

Neelima Koreti

Post Graduate student,
Deptt. of Zoology,
Govt. V.Y.T. Auto.P.G. College,
Durg (C.G.)

Abstract

Iron is a key component of hemoglobin. The body primarily obtains iron through dietary sources and inadequate levels of iron in the body prevents the blood from effectively carrying oxygen. The result of inadequate oxygen, iron and red blood cells in the body may ultimately lead to anemia; Low hemoglobin concentration is a measure of anemia, the end stage of iron deficiency. Iron from natural food sources, are considered safe and healthy because they are better regulated causing less damage to body. In the present work hemoglobin percentage was determined at definite intervals after regular consumption of Pomegranate juice till six weeks. The overall increase in hemoglobin level after sixth week was observed to 3%. Thus it was noted that pomegranate is proved to be useful in preventing a person from Anemia.

Keywords: Iron, Hemoglobin and Anemia

Introduction

Hemoglobin is a protein that transports oxygen (O_2) in human blood from the lungs to the tissues of the body. Hemoglobin is a globular protein consists of four subunits, and each subunit contains a heme group. Each heme group contains an iron atom that is able to bind to one oxygen (O_2) molecule. Because hemoglobin contains four heme groups, each hemoglobin protein can bind four oxygen molecules. The body primarily obtains iron through dietary sources and from red blood cells. The result of inadequate oxygen, iron and red blood cells in the body may ultimately lead to anemia.

Review of literature

From ancient times, man has recognized the special role of iron in health and disease (Beard & Dawson, 1997). For many years, nutritional interest in iron focused on its role in hemoglobin formation and oxygen transport (Underwood & Suttle, 1999). If iron intake is limited or inadequate due to poor dietary intake, anemia may occur as a result (Abbaspouretal, 2014). Anemia is the result of a wide variety of causes but the most significant and common cause of anemia is iron deficiency (De Benoist et al, 2008). Food-to-food fortification using iron-rich foods has been proposed as a sustainable and relatively inexpensive dietary modification approach to increase iron intake in low socioeconomic classes (Uvere et al, 2010). It requires the identification of locally available iron-rich foods whose consumption could be enhanced through recommendations and promotion campaigns. Iron is an important dietary mineral which is present in two types in food: Haemiron (from animal foods) and Non-haem iron (from plant foods). Vitamin C acts to markedly increase absorption of non-heme iron. Adding a vitamin C source to a meal increases non-heme iron absorption up to six-fold which makes the absorption of non-heme iron as good or better than that of hemeiron (Hallberg, 1981). The concentrations of major elements (N, P, K, Ca, Mg, S, Cl and Na) and trace elements (Mn, Fe, Cu, Zn, B, Ni, Co, Cr, Pb, Cd, Se, Al, As, Li, Sr, Ti and V) were determined in different parts of the pomegranate fruit (Olaniyi and Umezuruike, 2012). Other than several nutrients, 100ml juice of this fruit also contains 0.30mg of iron and 10.2mg of vitamin C which is about 4% and 17% respectively (nutrition & you.com). Normal range of Haemoglobin in male is 15.5 ± 2.5 gm% and in female is 14.5 ± 2.5 gm% (Jurger & Jurger 2005 -06).

Aim of the Study

The main purpose of study is the use of locally available iron-rich foods to prevent anemia. Iron from natural food sources, are considered

Periodic Research

safe and healthy because they are better regulated causing less damage to body. A number of dietary sources provide iron, and its deficiency may lead to various ailments. In the present study effect of juice of pomegranate on rise of hemoglobin was observed because the concentration of hemoglobin in red blood cells is a more sensitive and direct indicator of anemia.

Method

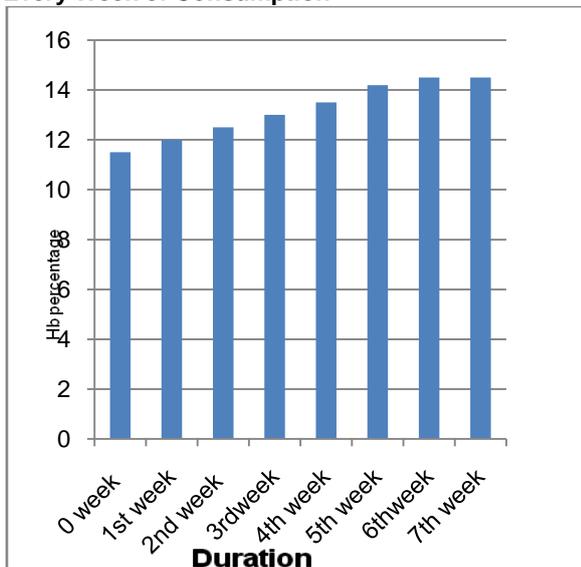
In this project work 100 gm juice of Pomegranate was consumed daily in every morning. After every week of consumption, the Hb%age was determined by Sahli's Hemoglobinometer (Acid Hematin Method). The whole process was repeated thrice at the same time to get accuracy in results. To observe the actual effect of Pomegranate on rise of Hb%age the initial value of Hb was recorded just before starting consumption (at zero week) and also one week after stopping consumption (i.e. reading shown against seventh week in table given below) of Pomegranate juice. For the confirmation of findings hemoglobin percentage was also determined through pathology lab before starting and ending the experiment.

Observations and Results

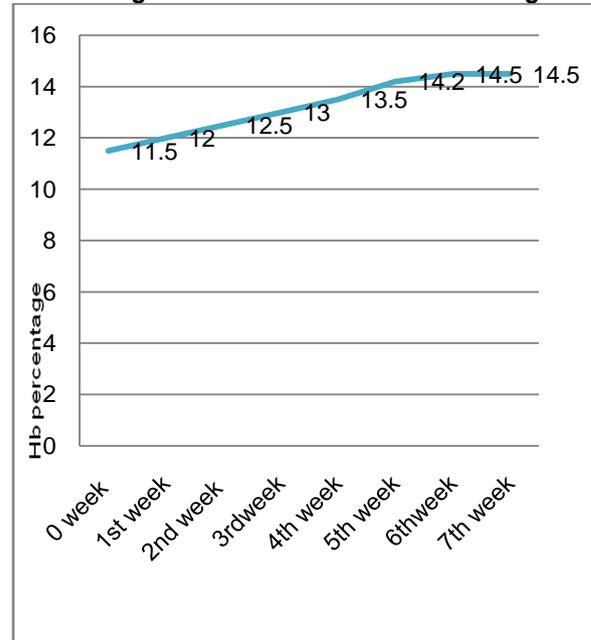
Table:1
Showing Hb % At Zero Week, After 1-6 weeks of Consumption and At 7th week

S. No	Duration of consumption	Hb(gm%) Observed In our lab	Hb(gm%) in Pathology lab
1	0 week	11.5	12
2	1st week	12.0	
3	2nd week	12.5	
4	3rd week	13.0	
5	4th week	13.5	
6	5th week	14.2	
7	6 th week	14.5	14.6
8	7 th week	14.5	

Histogram Showing Rise in Hb Percentage after Every Week of Consumption



Graph-1
Showing Gradual Increase in Hb Percentage



Discussion

In the present investigation, hemoglobin percentage observed at zero period (means before consumption of pomegranate) was 11.5 %. When the regular consumption of 100gms of pomegranate juice was started, an increase in haemoglobin with an average of 0.5% per week was observed. The hb % age remain constant in seventh week when consumption was stopped. Juice of pomegranate was observed beneficial to increase hemoglobin %age up to 3% because it not only contains iron but also high in vitamin C (nutrition & you.com) which increases absorption of non heme iron up to six folds (Hallberg, 1981). Reports obtained from pathology lab also showed the increase in hb% by 2.6gms and thus supports the role of pomegranate juice in improving hemoglobin level in blood.

Conclusion

Present study concluded that Pomegranate is proved to be useful for improving hemoglobin level in blood and thus preventing a person from "Anemia".

References

1. Abbaspour N., Hurrell R. and Kelishadi, R. (2014). Review On Iron And Its Importance For Human Health. *J Res Med Sci.* pp. 164-174.
2. Beard JL, Dawson HD. Iron. In: O'Dell BL, Sunde RA (1997), editors. *Handbook of Nutritionally Essential Mineral Elements.* New York: CRC Press; pp. 275-334.
3. De Benoist B, McLean E, Egli I, Cogswell M, editors. Geneva: WHO Press, World Health Organization; (2008). WHO/CDC. *Library Cataloguing-in-Publication Data.* Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia; p. 40.
4. Hallberg L. (1981) Bioavailability of dietary iron in man. *Ann Rev Nutr* ;1:123-147.

Periodic Research

5. Jurger V.& Jurger V. (2005-06) Estimation of Haemoglobin in Unified Practical Zoology, Ram Prasad & Son's Publication. 1st ed. Bhopal pp. 70-76. .
6. Underwood, E.J.&Suttle,N.F(1999). 3rd ed. Wallingford: CABI International Publishing . The mineral nutrition of livestock; p. 614.
7. .Uvere PO, Onyekwere EU, Ngoddy P.O.(2010). Production of maize-bambara groundnut complementary foods fortified pre-fermentation with processed foods rich in calcium, iron, zinc and provitamin A. J Sci Food Agric;90:566–73.
8. www.nutrition&you.com.