

## USE OF DRIED FIGS TO IMPROVE HEMOGLOBIN PERCENTAGE

NEERU AGRAWAL<sup>a1</sup> AND YAMINI RAWTE<sup>b</sup>

<sup>ab</sup>Department of Zoology, Govt. V.Y.T.P.G. Auto, College, Durg, Chhattisgarh, India

### ABSTRACT

Iron is a key component of hemoglobin. The body primarily obtains iron through dietary sources. The 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. A dietary intake of iron is needed to replace iron lost in the stools and urine as well as through the skin. Iron from natural food sources such as fruits, dry fruits, vegetables, whole grains, legumes etc, are considered safe and healthy because they are better regulated causing less damage to body. In the present work hemoglobin percentage was determined by hemoglobinometer at definite intervals. To start this experiment anemic person was selected to observe clear effect of dried figs. About 50 gms. of dried Figs were consumed per day till seven weeks and hemoglobin percentage was determined after every week. It was observed that hemoglobin level increases with 0.5% per week and thus after seventh week the overall increase in hemoglobin level was observed to 3.5%. In the present study dried figs are proved to be useful for improving hemoglobin level in blood.

**KEYWORDS:** Hemoglobin, Iron, Anemia

Hemoglobin is a protein that transports oxygen (O<sub>2</sub>) 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<sub>2</sub>) 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. Iron from natural food sources, are considered safe and healthy because they are better regulated causing less damage to body. In the present work effect of consumption of dried Figs on hemoglobin level was observed.

### 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 etal,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 etal.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: Heme iron(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 heme iron<sup>(4)</sup> (Hallberg,1981).Figs contain high amount of iron that is 5 % and 3% vitamin C (Rudrappa 2015) which helps in absorption of iron(Mangels 2009). Normal range of Haemoglobin in male is  $15.5 \pm 2.5$  gm% and in female is  $14.5 \pm 2.5$  gm% (Jurger&Jurger, 2005 -06).

### METHODS

In this project work 50 gms of dried figs were consumed daily by an anemic person having 9.5% Hb in every morning. After every week of consumption, the Hb%age was determined thrice by Sahli's Hemoglobinometer (Acid Hematin Method) to get accuracy in results. Average of three observations was taken. To observe the actual effect of dried figs on rise of Hb%age the initial value of Hb was recorded just before starting (at zero week) and one week after stopping consumption(.ie reading shown against eighth week in table given below) of

<sup>1</sup>Corresponding author

figs. For the confirmation of findings hemoglobin lab before starting and ending the experiment. percentage was also determined through pathology

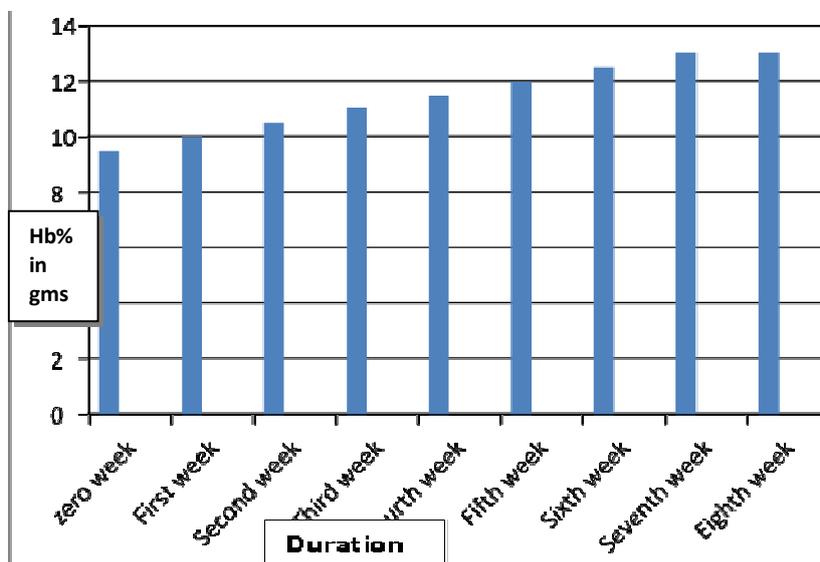
**OBSERVATIONS AND RESULTS**

**Table: Showing Hb% at zero week, after 1-7weeks of consumption and at 8<sup>th</sup> week.**

S. No	Duration of consumption	Hb(gm%)Observed In our lab	Hb(gm%) in Pathology lab
1	0 week	9.5	9.8
2	1 <sup>st</sup> week	10.0	
3	2 <sup>nd</sup> week	10.5	
4	3 <sup>rd</sup> week	11.0	
5	4 <sup>th</sup> week	11.5	
6	5 <sup>th</sup> week	12.0	
7	6 <sup>th</sup> week	12.5	
8	7 <sup>th</sup> week	13.0	13.0
9	8 <sup>th</sup> week	13.0	

**Histogram showing rise in Hb %age after every week of consumption**

Hb% in gms



**DISCUSSION**

In the present investigation, hemoglobin percentage observed at zero period( before consumption of Figs) was 9.5 %.When the regular

consumption of 50gms of Figs was started, an increase in haemoglobin with an average of 0.5% per week was observed. The hb%age remain constant in eighth week when consumption was stopped. Dried figs were observed beneficial to overall increase in

hemoglobin up to 3.5%. A rapid increase in hemoglobin may be because Figs contain high amount of iron as well as vitamin C (Rudrappa, 2015) which increases absorption of non heme iron up to six folds (Hallberg, 1981 and Mangels, 2009). Observations recorded in lab were also compared with the results taken in pathology lab just before starting consumption of figs and at the end of experiment. Reports obtained from pathology lab also showed the increase in Hb% by 3.2gms which is quite near to our observations and supports the role of Figs in improving hemoglobin level in blood.

### CONCLUSION

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

### REFERENCES

- Abbaspour N., Hurrell R. and Kelishadi R., 2014. Review On Iron And Its Importance For Human Health. *J. Res. Med. Sci.*, 164-174.
- Beard J.L., Dawson H.D., O'Dell, B.L and Sunde R.A., 1997. In Iron :editors. *Handbook of Nutritionally Essential Mineral Elements*. New York: CRC Press; 275–334.
- De Benoist B., McLean E., Egli I. and 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; 40.
- Hallberg L., 1981 Bioavailability of dietary iron in man. *Ann Rev Nutr.*, 1:123-147.
- Jurgen V. and Jurgen V., 2005-06. Estimation of Haemoglobin in Unified Practical Zoology, Ram Prasad & Son's Publication. 1st ed. Bhopal. 70-76.
- Mangels A.R., 2009. "Position of the American Dietetic Association: Vegetarian Diets." *J Am Diet Assoc.*, 109: 1266-1282
- Rudrappa U. (2015). [www.nutrition@you.com](http://www.nutrition@you.com).
- Underwood E.J. and Suttle N.F., 1999. 3rd ed. Wallingford: *CABI International Publishing*. The mineral nutrition of livestock; 614.
- Uvere P.O., Onyekwere E.U. and Ngodd 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.