

**Study On The Effect Of Wheat Grass Biscuits On Blood Haemoglobin Level
For The Treatment Of Iron Deficiency Anemia In Adolescent Girls At
Welfare Hostel In Vizainagaram District, Andhra Pradesh, India.**

Suneetha.Runjala¹, YLN Murthy²

1. Research scholar, Dept. of foods and Nutrition, Acharya Nagarjuna University, Guntur.
2. Dept. of organic chemistry, Andhra University, Visakhapatnam, Andhra Pradesh.

Abstract: Iron Deficiency Anaemia is a burden and it disproportionately affects children under 5 years of age, pregnant women, and non-pregnant women of reproductive age because of the increased nutrient needs and susceptibility to infections, as well as menstruation in non-pregnant women of reproductive age in developing countries. Present study intends to provide an overview of the chemical constituents present in the crude leaf extracts of *Triticum. Aestivum* linn. with special emphasis on supplementation to Iron Deficiency Anaemic adolescent children aged 13-16 years girls who are studying in tribal welfare residential ashram school, wheat grass biscuits supplementation therapy for 90 days (3 months) course, and evaluate the effect of dried wheatgrass powder biscuits on haemoglobin level. Group-A haemoglobin percent increased from initial Hb percentage 8g/dl to 11g/dl, group-B haemoglobin percent increased from 7g/dl to 10g/dl and group-C haemoglobin percent increased from 7g/dl to 10g/dl symptomatic improvement was observed in all groups from severe to moderate and normal levels.

Key words: Iron; Anaemia; haemoglobin; *Triticum Aestivum*; Adolescent.

Aim: To study the effect of wheat grass biscuits on blood haemoglobin level for the treatment of iron deficiency anemia in adolescent girls.

Introduction: Iron deficiency is defined as a condition in which there are no mobilizable iron stores and in which signs of a compromised supply of iron to tissues. Amount of haemoglobin present in the bloodstream is below the set thresholds, based on age, sex, and physiological status is also called anaemia. Iron Deficiency Anemia affects a quarter of the global population, including 293 million (47%) children younger than 5 years and 468 million (30%) non-pregnant women. In addition to anaemia's adverse health consequences, the economic effect of anaemia on human capital results in the loss of billions of dollars annually. Anaemia has multifactorial causes involving complex interaction between nutrition, infectious diseases, and other factors. Measuring hemoglobin is the primary method for assessing anemia.¹

1. 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

2. Wigmore A. Effect of wheat grass juice on Haemoglobin and similarity in

Triticum. Assetivum or Wheatgrass juice is called the green blood. Its most outstanding feature is its high content of chlorophyll at about 70 percent. Chlorophyll and haemoglobin both are structurally similar. The pH value of blood and wheat grass juice is about 7; therefore it is quickly absorbed in the blood and replenishes the body with electrolytes that benefit the body. Chlorophyll in wheatgrass is a detoxification agent, builds red blood cells and helps to restore healthy cells growth. It has the ability to neutralize toxins in the body, cleanses the lymphatic system and oxygenates the blood²

The demand for iron increases during periods of growth. One of the oldest intervention strategies is daily supplementation with iron tablets. However, without close control and supervision of consumption, these programs are ineffective because of irregular tablet distribution or poor compliance. Present study is A practical alternative daily snack (wheat grass biscuits) supplementation, which was shown to be effective in different age groups 13–16. Present study conducted at tribal welfare residential school for girls, P.amiti, vizainagaram dist., Andhra Pradesh ,India.

Methodology:

Detection of Iron Deficiency Anaemia:

The most common method of screening individual or populations for iron deficiency involves the determining of the prevalence of anaemia by measuring blood Hb or Haematocrit. Anaemia is not a specific indication of iron deficiency. Other nutrient deficiency and most infectious diseases can also result in significant anaemia.

Product development& Shelf life:

Wheatgrass powder based product development is was empirically investigated using standard procedures. Analyzed nutrient composition and tested shelf life for 12 weeks.

Intervention of supplementation:

The intervention with wheat grass biscuits done with 30 subjects i.e. adolescent girls of age 13 to 16 years for 90 days.

Selection of area: In Tribal Welfare Asrama school for girls P.Amity, Gummalakshmipuram, vizianagaram, Andhra Pradesh, India was select for carry out this investigation.

Data collection through Questionnaire:

The questionnaire method was used in the present survey is later one in which the interview also questions and records the response. Schedule was formed to collect the data and as follow. General information, Anthropometry measurement, Dietary information, Clinical information.

Selection of the Sample

Structure of haemoglobin and chlorophyll. The Wheatgrass Book. 2011.

The rapid hemoglobin screening test was conducted at welfare hostel selected thirty members according to their Hb percentage < 7g/dl as experimental group, 30 girls who are having Hb percentage of >10g/dl as control group. Special care was taken that the subjects were not taking any other supplements or drugs for control and cure of anemia. Other 30 subjects were control group who were not provided with any supplementation.

Table.No.1: Grading of anaemia: WHO Grading of Anemia: according to level of haemoglobin in blood .

Sl. No	Sample grading		
1	Grade 1 (Mild Anemia): < 10 g/dl	Grade 2 (Moderate Anemia): 7-10 g/dl	Grade 3 (Severe Anemia): < 7 g/dl

Table.No.2: Grading of girls According to Hb level

Group A	Group B	Group C
8- 10 g/dl	7- 8 g/dl	< 7 g/dl

Supplementation:

About 6gm of wheat grass given per day i.e. 2 serving (2 biscuits) of 30gm of wheat grass incorporated in 100gm of biscuits taken empty stomach and therefore taken in morning before breakfast. After 90 days (3 months) of intervention, biochemical estimation of blood hemoglobin level was done again using Sahli's Apparatus. The mean effect of wheat grass biscuits on hemoglobin percentage in each group after the completion of course for 90 days (3 months) was shown in table no. Statistical analysis before and after treatment was shown in table

Results:

Table No. 3 shows that Pre Intervention the mean haemoglobin level of the subjects of test group A was 8.67 ± 0.43 g/dl and Post Intervention it was found to be increased to about 10.21 ± 0.86 g/dl. Group B showed increased changes in haemoglobin level from 7.12 ± 0.81 to 9.23 ± 1.01 and severe anaemic group C showed increased change in Hb from $<6.6 \pm 0.08$ to 7.88 ± 0.04 respectively.

There was about 2 to 3gm/dl haemoglobin increased in blood. This shows a positive impact of intervention with wheat grass biscuits for treatment of anemia. Also, in the control group the mean haemoglobin levels of blood Pre Intervention was about 9.81 ± 0.8 g/dl and Post Intervention also it was found to be 10.01 ± 0.04 gm/dl. This shows that there was not any increase or decrease in the haemoglobin

level of subjects in control group as they were not supplied with any kind of supplementation during the period of intervention. Dysmenorrhea is a major problem in adolescent group during menarche due to less haemoglobin levels, it was cured during the supplementation.

Table No 3: Impact of Wheat grass biscuits on Haemoglobin (Hb) level Pre and Post Intervention:

Sample size	Mean Hb % before supplementation	Mean Hb% after supplementation
Group A(n=10) Mild	8.67 ± 0.43	10.21 ± 0.86
Group B(n=10) Moderate	7.12 ± 0.81	9.23 ± 1.01
Group C(n=10) Sever	< 6.6 ± 0.08	7.88 ± 1.78
control group n=30	9.81 ± 0.8 gm/dl	10.01 ± 0.04

Conclusion:

The use of wheat grass biscuits has shown in increasing of blood haemoglobin level. It is one of the simple remedy to treat anemia in adolescent girls and children. The findings revealed that most of the subjects coming under the age group 13 to 16 years were mild, moderate and severe anaemic. No subject from the test group complained about the taste of wheat grass biscuits. In the beginning a few subjects complained about nausea and vomiting. After 1 week they were normally taken biscuits and gained good Hb levels. Many subjects were relieved from dysmenorrhea after consumption of wheat grass biscuits.

The study about that the effect of wheat grass biscuits on blood haemoglobin level for the treatment of iron deficiency anemia in adolescent girls. Study revealed that all the subjects from the test group found an increase in their haemoglobin level of blood. There was an increase of about 2-3 g/dl in the haemoglobin level. This was proved with the help of biochemical estimation at the beginning and end of intervention. In the beginning the mean haemoglobin level of the subjects was about 7.1 g/dl i.e. they were severely anaemic and after intervention the mean was found to be 9.8 g/dl. This shows that there is a positive effect of wheat grass biscuits on blood haemoglobin level i.e. the haemoglobin level of subjects raised after consumption of biscuits for 90 days. Therefore wheat grass biscuits proved that can be useful for the treatment of any kind nutritional deficiency of anemia.

References:

1. 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. [[Google Scholar](#)]

2. Wigmore A. Effect of wheat grass juice on Haemoglobin and similarity in Structure of haemoglobin and chlorophyll. The Wheatgrass Book. 2011.
3. Gopalan C, Sastri BVR, Balasubramanian CS. Nutritive Value of Indian foods, ICMR, 2004.
4. Sharma S. Biochemical estimation of blood Haemoglobin level by Sahli's method, experiments and techniques in biochemistry. 2007.