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**Original Article**

# Therapeutic Use of Fresh juice of Cynodondactylon for the Treatment of Anemia in Young Women

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## ABSTRACT

**Background:** The fresh juice of ***Cynodondactylon*** (Bermuda grass) has widely been used in Indian Ayurveda medicine since ancient times for curing several human diseases. The pH of blood and Bermuda grass juice is also the same i.e. 7.4. Therefore Bermuda grass juice gets quickly absorbed in the blood and is often called as Green Blood and is used therapeutically for the treatment of various problems including anemia, thalassemia, hysteria, cough, headache, diarrhea, cramps, edema, dysentery, hemorrhage, hypertension and stones urogenital disorders. **Aim:** To study the effect of Bermuda grass juice on blood haemoglobin level for the treatment of anemia in women. **Methodology:** Sixteen Anaemic women (n= 16) [Test group (8) and Control group (8)] aged between 18-25years were selected after biochemical estimation of blood haemoglobin level using Sahli's Method. Bermuda grass juice (100 ml per day) was given for 30 days to the test group in empty stomach and no intervention as given to control group. Biochemical estimation was repeated after 1 month for haemoglobin level for both the groups using Sahli's method. **Result:** After 1 month of Intervention with Bermuda grass juice there was an average 4g/dl increase in haemoglobin level of test group than the control group. **Conclusion:** Bermuda grass juice has significant effect on increasing blood haemoglobin level and helps to cure anemia among women and there was no significant side effects observed.

**Keywords:** Bermuda grass juice; Anemia; Haemoglobin; Chlorophyll

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## INTRODUCTION

Nutritional or vitamin deficiency anaemia refers to a reduced red blood cell count due to poor diet habit, which is deficient in iron, proteins, vitamins like vitamin c, vitamin b12 along with folic acid.[1] Deficiency of above nutrients can affect production and life expectancy of red blood cells. Anaemia is one of the wide spread public health problems associated with an increased risk of morbidity and mortality, especially in pregnant woman and children. Among the world countries highest prevalence of iron deficiency anemia (IDA). [2] As India is a billionaire country accounts for the largest number of anaemic persons in the world. Data from NNMB and DLHS surveys have shown that prevalence of anaemia is very high (ranging between 80% to 90%) in preschool children, pregnant and lactating woman and adolescent girls. NNMB survey in 2006 showed that prevalence of anaemia among adult was 55% and among adult woman (non pregnant; non-lactating) was about 75%. According to data of National Family Health Survey (NFHS) III, the incidence of any anemia in urban children is 63%, among rural children is 71.5%, among wealthiest household is 56%, and overall is 69%.[3] In India Nutritional iron deficiency is the most common cause of Anemia. Bermuda grass is rich source of vitamins, minerals, amino acids, enzymes and chlorophyll. It is a natural source of iron. The quick absorption of bermuda grass juice in blood is because its chlorophyll structure. The Chlorophyll and hemoglobin are structurally similar. The pH of blood and Bermuda grass juices are also same i.e. 7.4.

**Objectives:** The aim of the study is to determine the effects of Bermuda grass juice on hemoglobin level in young anemic women.

## MATERIAL AND METHODS

16 Subjects were randomly selected among students and adults from premises of Government Yoga and Naturopathy Medical College and Hospital having Hb% below 10 gm%.

**Test group:** 8 subjects having Hb% below 10 gm% were given bermuda grass 100 ml in empty stomach.

**Control Group: 8** subjects having Hb% below 10 gm% were not given any supplements.

Certified species of Bermuda grass were grown in 12×18 inch area on ground on every day, as per standard procedure. 7 days old Bermuda grass collected and fresh juice was prepared.

**Preparation of fresh juice of Bermuda grass:** The aerial and underground parts of Bermuda grass were washed under running tap water. When the water evaporated, the grass was crushed with the help of mixer. Then it is squeezed through double layered muslin cloth. The juice thus obtained is called fresh juice.

**Dose:** 100 ml per day (empty stomach in the morning) for 30 days.

**Inclusion Criteria**

- Age group- Age between 18 to 25 years.
- Sex- Female.
- Subject ready to 30 days Bermuda grass juice therapy.
- Subjects having sign and symptoms of anaemia.

**Exclusion Criteria**

- Age group- Age below 18 years and above 30 years.
- Pregnant and lactating women and male.
- Subject having any acute or chronic illness.
- Subjects having Hb% lower than 6 gm%.

**Investigation:** Hb% was estimated using by Sahli's haemoglobin meter before starting the course of Bermuda grass juice therapy and after the completion of 30 days course.

**Statistically analysed:** The obtained data were analyzed statistically. The values were expressed as Mean + SD. The data were analyzed by paired 't' test. The level $P < 0.01$ and $P < 0.001$ was considered as statistically significant and highly significant respectively. Level of significance was noted and interpreted accordingly.

**Results:**

**Table 1:** Impact of intervention with Bermuda grass through Haemoglobin (Hb) level Pre and Post Intervention with juice.

| **Group** | Pre Intervention **Hb Mean (g/dl) ± SD** | Post Intervention **Hb Mean (g/dl) ± SD** | P value |
|---|---|---|---|
| **Test group** | 8.7467 ± 0.997776 | 12.4867 ± 1.22874 | ≤0.0001 |
| **Control group** | 8.7800 ± 0.75814 | 8.9867 ± 0.76210 | 0.54798 |

Table 1 depicts that in Pre Intervention the mean haemoglobin level of the subjects of test group was 8.7 g/dl and Post Intervention it was found to be increased to about 12.4 g/dl. There was about 4 g/dl increase in haemoglobin level of blood compared to control group. This shows a positive impact of intervention with Bermuda grass juice for treatment of anemia.

## DISCUSSION

In the present study, the effect of fresh extract of *Bermuda grass on Hb %* in patients with anemia has been assessed. Bermuda grass contains important phyto-constituents like Flavonoids (apigenin, luteolin, orientin and vitexin), carotenoids (beta-carotene, neoxanthin, violaxanthin, phenolics, phytosterols, glycosides, saponins) and volatile oils .There is growing evidence from experimental and clinical studies, that oxidative stress may be implicated in the pathogenesis of anaemia.[4] Free radical damages the cells and plays a major role in the aging process and in disease progression. Free radicals are produced by endogenous cellular sources during normal cell metabolism.[5] Increase production of ROS can cause oxidation of proteins, lipid peroxidation and DNA oxidation, alternation in gene expression and change in cell redox status [6]. Oxygen free radicals are reportedly involved in the toxicity of numerous chemicals and also in pathogenesis of many diseases [7]. Antioxidants are the chemical compounds which scavenge or suppress the formation of reactive oxygen species (ROS) and are defence against free-radical damage and are critical for maintaining optimum health. The antioxidant enzymes present in Bermuda grass break the chain of free radical formation and regulate the tissue damage. Ethanolic extracts of aerial part of C. dactylon were found to possess potent DPPH free radical scavenging activity and nitric oxide scavenging activity. Ethyl acetate extract of over ground part of this plant has shown greater antioxidant ability based on estimating non enzymatic haemoglobin glycosylation. [8] A previous study done by Tutal *et al.* also showed that increased antioxidative capacity had positive effect with haemoglobin levels which correlates to our present study. Hence the fresh juice of Bermuda grass has significantly increase the haemoglobin level among young women.[9]

## CONCLUSION

Bermuda grass juice contains many vitamins, minerals, enzymes and also it is a very much rich in anti-oxidants. The antioxidant effect of bermuda grass juice has shown to improve the of hemoglobin level in test group (8.7467 ± 0.997776 to 12.4867 ±1.22874) than the control group (8.7800 ± 0.75814 to 8.9867 ± 0.76210) by 4 g/dl among anemic young women.

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