



## PRODUCT DEVELOPMENT OF WHEAT GRASS POWDER AND ITS NUTRITIONAL ANALYSIS

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### ABSTRACT

The early shoot of *Triticum aestivum* which is called as wheatgrass, that belong to Gramineae family having high amount of chlorophyll content along with essential minerals, vitamins, enzymes, amino acids, dietary fibers. Wheatgrass is recognized useful as in many medical treatments for anti-ulcer activity, anti-cancer activity, antioxidant activity, blood building activity majorly in Thalassemia. It is stated that wheatgrass is also helpful in blood flow, digestion, and also it detoxifies the human body. The majorly present component is bioflavonoid which is very active in mineral compounds and antioxidant properties. One can get around 70% of chlorophyll which can resemble haemoglobin chemically thus can be used in many haemoglobin deficient medical conditions. The development of product from wheatgrass is done to check out its nutrient conditions during processing of cookies in which baking is done at temperature around 100°C to 150°C. The cookies were being prepared by using various composition starting from 5% to 50% incorporation of wheatgrass powder that is rich in energy, protein, fat, vitamins, minerals which are essential to human immune system and also the direct consumption of wheatgrass is not possible for human being staying in developed areas so the new product with essential component is required. Further the storage condition was to be checked during storage at various different conditions for any changes in texture, rancidity, microbial growth in air sealed packaging.

**Keywords:** Wheatgrass, Essential Component, Product Development, Human Essential, Storage Conditions.

### INTRODUCTION

*Triticum aestivum* commonly called wheat grass, belonging to the family: Gramineae. *Triticum* is be a genus of annual and biennial grasses. Generally, 15-20 species are recognized. Wheat grass may be a good source of mineral nutrients. It contains significant amounts of iron, phosphorus, magnesium, manganese, copper & zinc (Mujoriya, 2011).

Wheatgrass may be a rich source of tocopherols with high vitamin E potency. The presence of 70% chlorophyll, which is nearly resembles to haemoglobin. Both chlorophyll and hemoglobin feature a similar structure of atom which create their respective molecules. The sole difference in between them is that in chlorophyll central element is magnesium and in hemoglobin iron acts as central element. Wheat grass stimulates metabolism, restores alkalinity to the blood, its abundance of alkaline minerals helps reduce over acidity within the blood. Wheatgrass also acts as a detoxifying agent and helps to revive healthy cells(Murthy, 2013).

Wheat grass, the first stage grass of the *Triticum aestivum* plant, is freshly juiced or dried into powder for animal and human consumption- both juice or powdered form provide chlorophyll, some amino acids which are essential minerals, vitamins and enzymes. it had been also stated that earlystage grasses and other chlorophyll rich plants are safe and effective treatment for a few medical conditions like increased blood pressure, some cancers, obesity, diabetes, gastritis, ulcers, pancreas and liver,fatigue, anemia, asthma, eczema, hemorrhoids, skin problems, halitosis, body odour and constipation.(Mujoriya, 2011).

Wheatgrass is rich in chlorophyll, minerals like magnesium, selenium, zinc, chromium, antioxidants like beta-carotene (pro-vitamin A), vitamin E, vitamin C, anti-anemic factors like vitamin B12, iron, folic acid, pyridoxine and lots of other minerals, amino acids and enzymes, which have significant nutritious and medicinal value. Scientifically it had been proved that different sorts of wheatgrass extracts are beneficially utilized in treatment of anemia, thalassemia (major), cancer and bacterial diseases. The supplement of wheatgrass is out there commercially in liquid, powdered or concentrated forms, counting on the supplier and may be consumed on its own, or mixed with various fruit juices.

Wheatgrass juice has been shown to possess some medicinal value; a review of the scientific literature found studies reporting high levels of antioxidants it's demonstrated anti-cancer properties both in-vitro and in-vivo, and has been found to scale back the frequency of blood transfusions in thalassemia patients Scientific studies regarding the health benefits of chlorophyll have shown anti-cancer effects in animal models, and studies are extended to human subject.(Chauhan, 2014)

### HEALTH BENEFITS OF WHEATGRASS

Wheatgrass is the early-stage grass of wheat plant. It is a humble weed that acts as a powerhouse of nutrients and vitamins for human body. It has high amount of chlorophyll, active enzymes, vitamins, and other essential nutrients. Wheatgrass juice is also called as green blood therapy. The green blood therapy is mainly recommended for the people suffering with chronic diseases viz., Asthama,



Joint Pains, TB, Constipation, Hypertension, Diabetes, Bronchitis, etc., It is also found very useful in treating the cancer. (Mujoriya, 2011).

It is a source of many essential vitamins that are required for human health. For example, Vitamin A, Vitamin B, Vitamin C, Vitamin E, Vitamin K and B-complex vitamins.

It is good source of amino acids hence the amount of protein which is required for muscular strength and physical elegance is found in large quantity. Plasmas, antibodies and hormones are mainly obtained from proteins. The amino acids help in digestion, blood formation.

It is also good source of minerals that are necessary for humans. It is essential source Iron, Calcium, Potassium, Zinc, Magnesium, etc.

It is good source of chlorophyll. It is present in the cells of wheatgrass called chloroplasts. The chemical composition of wheatgrass and human blood is quite similar. The pH of both is around 7.4 hence it is easily dissolved in blood. The human blood contain haemoglobin which is obstructed by regeneration hence some of the physicians have successfully used the wheatgrass therapy for treating the diseases like skin diseases, TB, ulcer, heart diseases, etc. It acts as substitute for natural blood cells. (Mujoriya, 2011)

## MATERIAL AND METHODS

### Wheat grass

The best quality wheat grains were taken and cleaned properly. The grains were soaked in water for 12 hours. Due to soaking the grain become tender which also decreases the phytin level. After soaking grains were hanged in cloth for more 12 hours for germination process. During germination the sprinkling of water was done for three time in a day. Moisture and temperature are essential during period of germination. After 12 hours of germination the germinated grains were sowed in shady area as we know that wheat can grow in all temperature, shady area is taken to avoid its nutrient loss. The sowed grains started to grow and after six days on seventh day the grass was about 15 to 18cm in length which was then ready for harvesting. During germination process many enzymes get activated which helps to increase the nutrients availability. It also helps to increase the amino acid and vitamin content. (Goldin, 2002)

### Preparation of Wheat Grass Juice and Powder

The juice was prepared from early-stage leaves of wheatgrass. For juice preparation 100g of leaves was crushed in about 40ml of water and it was filtered through muslin cloth and final volume of filtrate was makeup to 100ml by increasing water content. (N, 2018)

The early-stage wheatgrass leaves were cleaned with water prior to drying in dehydrator. The temperature used for drying leaves was about 30-35°C for time of 24 hours. The leaves which were dried were blended in powder form and stored in plastic bags. (D, 2011)

### Analysis of Wheat Grass Powder

The prepared wheatgrass powder was analyzed for its chemical composition that is present in it. The analysis is basically done for moisture content, ash content, amount of crude fat, amount of crude protein and the dietary fibre. The presence of phytochemical like reducing sugars, tannins and saponins was also analyzed.(TandonS, 2011)

### Preparation of Cookies

The preparation of cookies was done by using formula: 500g flour, 250g sugar, 300g shortning, 3.0g cardamom, 7.0g of leavening agent. First by adding shortening and sugar beating was done till sugar dissolves. Then the flour and leavening agent was added and mixed for about 5-6 minutes. The cardamom powder was added after proper mixing. The molding was done along with measuring its dimensions and the baking was carried at 180°C for 10-12 minutes. (N, 2018)

### Analysis of Cookies

Cookies were further analyzed for their chemical composition like moisture, fat, protein content, dietary fibre content, etc. The extract was prepared by using 10% extract of wheatgrass powder along with 70% ethanol which was mixed and centrifuged at around 13500rpm for about 30 minutes at 4°C of temperature which was used for further experiments. (N, 2018)



## Evaluation of Cookies

### Physical Characteristics

The width of cookies was calculated by keeping cookies in horizontal direction and then rotating them at right angle i.e 90°. The thickness of cookies was calculated by keeping cookies in vertical position and reading were taken by changing their positions. Texture analysis was done by using texture analyzer by taking three various readings. (N, 2018)

### Sensory Characteristics

The overall acceptability of cookies was done by using 9-point headonic scale. The evaluation was done on basis of color, taste, texture, flavour, and crispiness.(H, 2010)

## CONCLUSION

Wheatgrass has proved itself that it is a rich source of nutrients. Wheatgrass is widely used in clinical treatments as anticancer, antiulcer, antioxidant, etc., Wheatgrass is rich in chlorophyll content hence can be used for treatment of haemoglobin. As wheatgrass is good source of many essential nutrient the future use of in various product development is to be carried out. Wheatgrass powder is formed by drying the wheatgrass juice which can be used in various product development. Wheatgrass powder cookies are rich in various nutrients required for human health like vitamins, minerals, proteins, etc., The cookies are consumable for all age group people. They can be stored for 3 to 5 months.

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