RESEARCH PAPER — FOOD SCIENCE RESEARCH JOURNAL
ISSN-0976-1276 ■ Visit us : *www.researchjournal.co.in*
Volume 10 | Issue 2 | October, 2019 | 189-192
DOI : 10.15740/HAS/FSRJ/10.2/189-192

Cultivation, proximate composition and preliminary phytochemical analysis of wheat grass (*Triticum aestivum* L.) powder

Namrata Jain, Mamta Singh and Neelam Chaturvedi

Wheat grass (*Triticum aestivum*) is a humble weed a power house of nutrient and vitamin supplements. Its main component is chlorophyll which is around 70 per cent. This can be consumed both in raw juice and powdered form. Considering its nutritional completeness and possible health implications of being blood builder, antioxidant, antiager, cell rejuvenator, cancer inhibitor, immune system supporter the study was undertaken to estimate nutritional composition and qualitative phytochemical analysis of wheat grass powder. About 100g wheat grass powder was obtained from 1 kg of fresh wheat grass. Nutrient composition of wheat grass powder (WGP) was found to be impressive with protein content 25g per cent, fibre 30g per cent. Values of mineral ash, carbohydrate, moisture and fat were recorded as 4.8g, 33.7g, 6.3g and 0.2g, respectively. Preliminary phytochemicals screening indicated the presence of Terpenoids, alkaloids, tannins, saponins, and sterols. The chlorophyll estimation indicated wheat grass powder contains 525 mg of chlorophyll in100 g of *T. aestivum* powder . Thus, it can be concluded that plant based wheat grass is an ideal supplement for general health and well being with therapeutic uses. It has an immense potential in the main stream of food processing industries as a health benefactor which proves to be beneficial for the society in prevention from life threatening diseases.

Key Words : *Triticum aestivum*, Nutritional composition, Phytochemicals, Wheat grass powder (WGP)

How to cite this article : Jain, Namrata, Singh, Mamta and Chaturvedi, Neelam (2019). Cultivation, proximate composition and preliminary phytochemical analysis of wheat grass (*Triticum aestivum* L.) powder. *Food Sci. Res. J.,* **10**(2): 189-192, **DOI : 10.15740/HAS/FSRJ/10.2/189-192**.

INTRODUCTION

Wheatgrass is a food prepared from the cotyledons of the common wheat plant, *Triticum aestivum*. It is sold either as a juice or powder concentrate. Diet occupies an important place during sickness and healthy condition. Our body has the inbuilt ability to heal itself if provided proper nutrition, environment and exercise. Wheatgrass is renowned for its therapeutic value since ancient times. The beneficial nutrients naturally obtained from wheatgrass helps to promote health and healing. In today's modern times, making the availability of *Triticum aestivum* powder popularly known as wheat grass powder has made its benefits accessible to needy people worldwide. A natural powder created from fresh wheat grass is 100 per cent organically grown. No chemical fertilizer and pesticide is added and is perfect for health.

MEMBERS OF RESEARCH FORUM

Author for correspondence :
Namrata Jain, Department of Food and Nutrition, College of Home Science, Swami Keshwanand Rajasthan Agricultural University, **Bikaner (Rajasthan) India**
Email: jainnamrata.23@gmail.com

Associate Authors' :
Mamta, Singh and Neelam, Chaturvedi, Department of Food and Nutrition, College of Home Science, Swami Keshwanand Rajasthan Agricultural University, **Bikaner (Rajasthan) India**

Frequent consumption of wheat grass powder can help to eliminate toxins from body, reduces cholesterol and improves digestion. Chlorophyll of wheat grass balances blood sugar. A nourishing and refreshing drink that best quenches thirst is suitable for both young and old. Wheatgrass has the amazing ability to concentrate maximum nutrients from the soil. Scientists have established that it has to be cultivated carefully and harvested at the 'jointing' stage (6 to 7 days in tropical climate) when its nutritional content is at its peak. Wheat grass is a naturally rich source of vitamins, minerals, amino acids, enzymes, chlorophyll and dietary fibre. In juice form it contains 70 per cent chlorophyll, which is often referred to as the blood of plant life. It closely resembles the molecules of human red blood cells. Chlorophyll has been shown to produce an unfavourable environment for bacterial growth in the body and therefore, effective in increasing the body's resistance to illness. Growing wheat grass to about seven inches tall is optimum for its health benefits. Simply place selected grain in about one-inch of organic soil to enjoy one of the most cleansing and nutritious juices available. Wheat grass is easy to cultivate at home level and is not so popular in India, therefore, to create awareness about this "Sanjivini Buti" present study was undertaken to study nutrient composition and phytochemicals content of wheat grass powder (wekipedia.org/wiki/wheatgrass).

METHODOLOGY

Methodological aspects related to present study are discussed in three phases.

Phase I: Cultivation and processing of wheat grass:

The wheat grass (*T. aestivum*) used in this study was grown indoors until required for experiments. Earthen pot of 12 x12 inches and about 33 depth was filled with ½ inch soil. Overnight soaked *T. aestivum* seeds were then evenly spread over it and further covered with ½3 soil. Small quantities of water were sprinkled evenly over soil and 3-4 hours indirect sunlight was allowed daily for growth of grass. On the tenth day, when grass is about 7 inch tall, it is cut ½ inch above the surface of soil and shade dried and powdered.

Phase II: Analysis of proximate principles:

This phase dealt with the analysis of the nutrient composition of wheat grass powder.

Wheat grass powder was subjected to the determination of moistures, ash, crude fibres, proteins, fats, irons, calcium and vitamin C (Sharma, 2007).

Phase III: Analysis of phytochemicals and chlorophyll:

Phytochemical analysis for major phytoconstituents like steroids, glycosides, terpenoids, saponins, tannins and flavonoids was undertaken. Fresh *T. aestivum* grass was subjected to qualitative tests by standard methods as described by Handa (1995) for preliminary phytochemical analysis. The chlorophylls are the essential components for photo synthesis and occur in chloroplasts as green pigments in all photosynthetic plant tissues (Harborne, 1983). They are bound loosely to proteins but are readily extracted in organic solvents such as acetone of ether. Chlorophyll is extracted in 80 per cent acetone and the absorption is read in spectrophotometer.

OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation have been discussed in the following subheads:

Processing of wheat grass (*T. aestivum*):

100 g wheatgrass powder, obtained from 1 kg of fresh wheatgrass, can supply nourishment equal to that obtained from 23 kg of selected vegetables (Rana *et al.*, 2011). Wheatgrass powder is high in dietary fibre and thus, helps maintain blood sugar level, cholesterol level and prevents constipation.The super energy, enzymes, and fresh juice of wheatgrass is a high quality nutition, health and energy boost. Wheat grass is one of the so-called green foods that are valued by health conscious individuals as a great natural source of nutrients. Wheatgrass is considered to be a complete food in itself. Due to its fibrous nature, which is indigestible by humans, wheatgrass must be liquefied before it can be consumed.

Nutritional composition of wheat grass powder:

Nutrition composition of wheat grass powder are presented in Table 1 and results revealed that moisture content of wheat grass powder was 6.30 g. Protein content of wheat grass powder was 25 g. It is a complete protein containing over 20 essential and non-essential amino acids. Fat content of wheat grass powder is 0.90 g which contains essential fatty acids: Linolenic acid and Linoleic acid. Carbohydrate content was calculated by

Table 1: Nutrient composition of wheat grass powder

Sr. No.	Nutrient composition	Per 100 g
1.	Moisture (g)	6.30
2.	Protein (g)	25.00
3.	Fat (g)	0.90
4.	Carbohydrate (g)	33.00
5.	Mineral ash (g)	4.80
6.	Fibre (g)	30.00
7.	Vitamin C (mg)	63.00
8.	Calcium (mg)	73.80
9.	Iron (mg)	52.00

Table 2 : Preliminary phytochemical analysis of wheat grass

Sr. No.	Phytochemicals	Presence
1.	Terpenoids	+ ve
2.	Steroids	+ ve
3.	Tanins	+ ve
4.	Saponins	-ve
5.	Glycosides	-ve
6.	Flavanoids	-ve

different method results showed that it contain about 33 g. Fibre content is very high (30 g). Vitamin C content was 63 mg. Most of the Vitamin C is lost during drying process of green grass powder. It is also a good source of total mineral (4.80 mg). Mineral composition of wheat grass powder indicated that calcium and iron found to be 73.8 and 52 mg, respectively per 100 g of wheat grass powder. Wheat grass is an excellent source for all major and minor minerals, containing 92 of the 102 minerals found in the soil. It is specially high in calcium, magnesium, manganese, phosphorus and potassium, as well as trace minerals such as zinc and selenium. Wheat grass is a good source of crude fibre, protein and vitamin C which are essential factors for maintenance of good health (Meyerowitz and Steve, 1999)

Phytochemical composition of wheat grass powder:

Phytochemicals are nutritive plant chemicals that contain protective and disease preventing compounds. They are often lumped together under the term "Phytochemicals" – "Phyto" from the greek word for plant, denoting their plant origins. Pharmacologically active plant phytochemicals include flavonoids, saponins, lignans and tannins. Preliminary phytochemical analysis of wheat grass powder showed that terpenoids, steroids and tannins were detected and whereas rest of the phytochemicals like saponins, glycosides and flavonoids were not found.

The amount of chlorophyll was 513.5 mg/ 100g. This establish that wheat grass is a healer, blood regenator also helpfull in reverse mutagenic activity (Wigmore, 1985). Chlorophyll found in wheat grass can prevent the growth of harmful bacteria. A number of studies have shown the ability of chlorophyll to retard the growth of bacteria in wounds, as well as confirming its anti-inflammatory properties. The major clinical utility of wheat grass in diseased conditions might be due to its antioxidant potential which is derived from its high content of bioflavonoids. The presence of 70 per cent chlorophyll, which is almost chemically identical to hemoglobin which makes it more useful in various clinical conditions (Singh *et al.,* 2012).

Conclusion:

The study concludes that the use of wheat grass powder could be of immense help in leading a healthy life. Although the medicinal and therapeutic uses of wheat grass is well noted, yet the utilization is not widespread. Wheat grass is an ideal supplement for general health and well being which proves to be beneficial for the society

in prevention from life threatening diseases. The amount of chlorophyll in grass is very high, this establishes that wheat grass is a healer, blood regenator and also helpful in reversing mutagenic activity. Awareness among people about the availability, nutritional and therapeutic values of wheat grass can be done by using wheat grass powder as an ingredient in product development. One teaspoon of wheat grass powder is recommended for daily basis.

LITERATURE CITED

Handa, S.S. (1995). Quality control and standardization of herbal material and traditional remedies. *East Pharma*., **38**: 23-25.

Harborne, J.B. (1983). *Phytochemical methods:* A guide to modern techniques of plant analysis. 2nd Ed., Chapmann and Hall, London, United Kingdom.

Meyerowitz and Steve (1999). Wheat grass natures finest medicine. *Mass US: Sproutman*. **58** : 98-106.

Rana, S., Kamboj, J.K. and Gandhi, V. (2011). Living life the natural way- Wheat grass and Health. *Functional Foods in Health & Diseases*, **1** (11) : 444-456.

Sharma, S. (2007). *Practical biochemistry*. Jaipur: Classic Publishing House, 269-271pp.

Singh, N., Verma, P. and Pandey, B.R. (2012). Therapeutic potential of organic *Triticum astivium* (wheat grass) in prevention and treatment of chronic diseases. *Internat. J. Pharmaceutical Sci.& Drug Res*., **4**(1) : 10-14.

Wigmore, A. (1985). The wheat grass book. United States of America, Avery a member of Penguin Putnam Inc.

Received : *25.04.2019;* **Revised :** *13.09.2019;* **Accepted :** *19.09.2019*