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Amino Acid And Vitamin Content Of Wheatgrass (*Triticum Aestivum)* Powder

Neha Thakur[1] and Prof. Archana Singh[2]

1. Correspondence author and Research Scholar, Institute of home science, DBRAU, Agra, India.
Email- nehathakur2.1989@gmail.com
2. Professor and H.O.D. (Dptt. Of food and nutrition), Institute of home science, D.B.R.A.U., Agra

Abstract

Wheatgrass is the world's most edible grain cereal-grass which belongs to the Gramineae (Poaceae) family. It is rich in vitamins and proteins in comparison of seed kernel, or grain products. Wheatgrass is effective in the treatment for several diseases like ulcerative colitis, cancer, mouth ulcers and joint pain etc. Present study was carried out in order to analyse the amino acid and vitamin content of wheatgrass powder. For that, wheatgrass was soaked, germinated and grown in plastic trays and dried in microwave at 600 W for 15 mins. Then, fine powder was formed. Amino acids namely methionine, lysine, leucine, phenylalanine, valine, histidine, isoleucine, threonine and tryptophan were analysed by HPLC. β carotene and Ascorbic acid were analysed by AOAC (2000) whereas folic acid was analysed by the method of Ranganna (1986). It was found that wheatgrass powder had methionine, lysine, leucine, phenylalanine, valine, histidine, isoleucine, threonine and tryptophan were present in the amount of 64.4, 73.42, 120.39, 112.13, 116.33, 36.44, 80.18, 96.2, 35.32 mg/ 100g respectively. Whereas, amount of β carotene was 182.46 ± 0.040 µg, ascorbic acid was 2.25 ± 0.005 mg and folic acid was 212.92 ± 0.078 µg present in wheatgrass powder.

Keywords: Wheatgrass, wheatgrass powder, amino acids, vitamins.

Introduction

Wheat, (*Triticum* species) is a cereal grass belongs to the *Gramineae* (*Poaceae*) family [7]. It is a young grass of wheat family which is rich in nutrients such as vitamins, minerals and proteins in comparison of seed kernel, or grain products [11]. It is the world's most edible grain cereal-grass crop. At present, companies using wheatgrass as a food supplement in the form of tablets, juice and powder which provides an abundant amount of nutrients such as calcium, magnesium, iron, amino acids, chlorophyll and antioxidants. Some studies reported wheatgrass as an effective treatment for several diseases like ulcerative colitis, cancer, mouth ulcers and joint pain etc [5] [3]. Small amount of wheatgrass has nutritional value greater than large amount of vegetables. Presence of bioactive constituents like phenolics, flavonoids

and others increased the effectiveness of wheatgrass in the treatment of several diseases [4]. Germination results in the synthesis of vitamins, minerals, and phenolic compounds including flavonoids in wheat sprouts and increased the potential of antioxidants as well [8].

Amino acids such as, arginine, glutamic acid, alanine, serine, aspartic acid, tryptophan, methionine, lysine and cystine are present in good amounts in wheatgrass. Amino acids are building blocks of protein. Out of 300 amino acids that have been described yet, only 20 amino acids take part in protein synthesis. These 20 amino acids did not appear in nature so, it is necessary to include them in the diet otherwise, their deficiency results in decrease formation of protein that leads to various diseases [1]. So, wheatgrass intake can play as an important role in the fulfilment of amino acids in the body.

Wheatgrass is also rich in various vitamins like vitamin C, various B vitamins, Vitamin E and folic acid. It will be helpful in combat the various vitamin deficiencies and thus it can be helpful in the prevention of diseases like anaemia, glossitis, skin problems etc. [10].

Present study was carried out in order to analyse the amino acid and vitamin content of wheatgrass powder.

Methodology

Development of wheatgrass powder:

Firstly, wheat seeds were soaked overnight in water. For 12 hours, soaked wheat seeds were hung in muslin cloth and kept in aerated place for germination. Then germinated seeds were spread over the soil in the trays and avoid overlapping of the seeds and some soil was sprinkled to cover the seeds and then trays were kept in shady place to avoid nutrient loss. Regular watering was done by spray. Wheatgrass was cut down on 7^{th} day, at this time it reached to the height of 6-8 inches. Then, wheatgrass was microwave dried at 600 W for 15 mins and its powder was formed by using domestic mixer grinder and powder was kept in airtight jar of glass.

Quality evaluation of wheatgrass powder:

Nutrient analysis: Wheatgrass powder was analysed for amino acids- methionine, tryptophan, lysine, leucine, phenylalanine, valine, histidine, isoleucine and threonine as well as vitamins such as β carotene, ascorbic acid and folic acid. Amino acids were analysed by HPLC method. β carotene and ascorbic acid were analysed by AOAC (2000) method whereas folic acid by the method of Ranganna (1986).

Statistical analysis

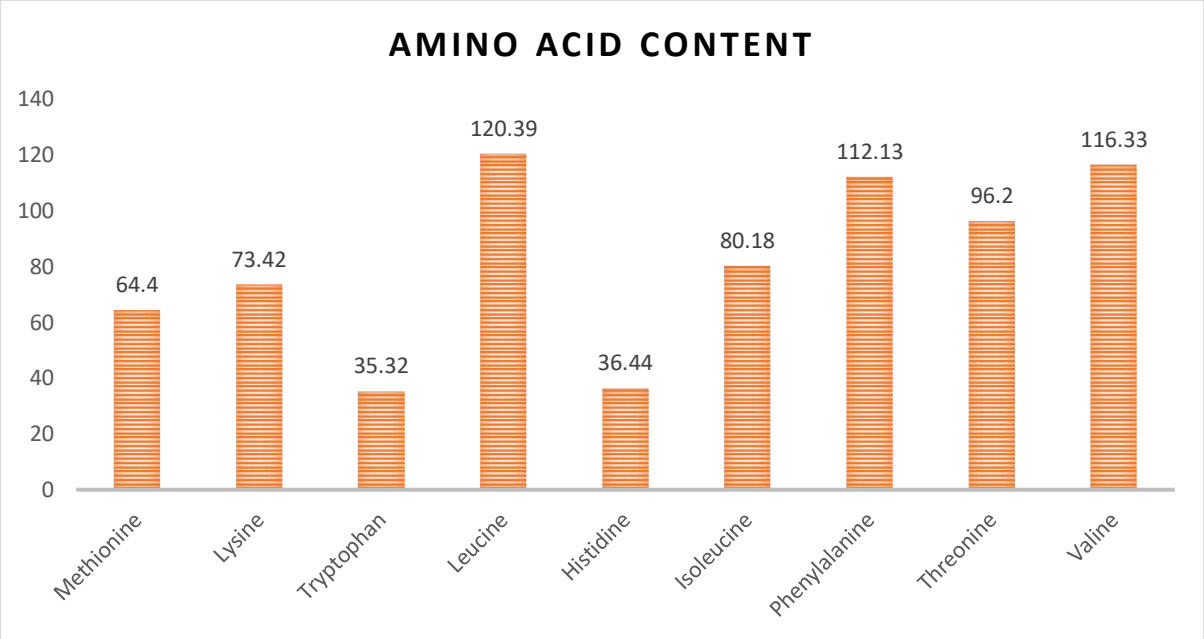
Mean and standard deviation were used to present the data.

Result and Discussion

Amino acids-

Wheatgrass powder had methionine, lysine, leucine, phenylalanine, valine, histidine, isoleucine, threonine and tryptophan were present in the amount of 64.4, 73.42, 120.39, 112.13, 116.33, 36.44, 80.18, 96.2, 35.32 mg/ 100g respectively.

Figure 1: Amino acid content of wheatgrass powder (mg/ 100 g)



Vitamins-

β Carotene: Wheatgrass powder had 182.46 ± 0.040 µg of β carotene in it.

Ascorbic acid: Amount of ascorbic acid in wheatgrass found was 2.25 ± 0.005 mg.

Folic acid: Wheatgrass powder had 212.92 ± 0.078 µg of folic acid in it.

Table 1: Vitamin content of wheatgrass powder (mg/ 100 g)

Vitamin	Amount per 100 g
β Carotene (µg)	182.46 ± 0.040
Ascorbic acid (mg)	2.25 ± 0.005
Folic acid (µg)	212.92 ± 0.078

Conclusion

The result obtained from the nutritional analysis of wheatgrass powder revealed that it contains good amount of amino acid i.e., leucine, phenylalanine, threonine, lysine, isoleucine and valine. It contains high amount of β carotene and folic acid. It also contains fair amount of ascorbic acid. So, it can be recommended in various diseases and can be used to form various value-added products to enhance nutritional status.

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