

Wheat and its Importance of High Quality Protein that Effects the Human Health

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Received: 08 Jan 2020/ Revised: 24 Mar 2020/ Accepted: 25 May 2020

ABSTRACT

Background- Mostly Wheat is a highly cultivated crop in the world. On the comparison of consumption, the two most important crop is wheat, rice and maize, which is used for the human diet. It is used for bread, cakes, pasta are prepared by wheat flour the fermented preparation for alcohol, beer, vodka and biofuels. Cornhusk separated by wheat flour, which is known as bran.

Methods- NIRS-2500 is a recent technology to apply the evaluation of grain properties such as their physical and biochemical properties.

Results- According to the our results, evaluation of wheat variety the protein, moisture, carbohydrate, ash, fiber, ADF, NDF and vitamin content were ranged from 15.28% to 15.57%, 15.28 K-402, K-9107 to 15.57%, K-9644, K-402 6.41% to 6.61%, K-1317, K-9644 3.68% to 3.72%, K-402, K-307, K-607 4.10% to 4.12%, K-307, K-9162, 7.24% to 7.54% K-402, K-9644, 17.66% to 17.90%, K-402, K-9644 and 27.01% to 27.79% K-402, K-1317, K-9644 and K-1317.

Conclusion- The modern time quantity-wise natural fiber was used in flax, hemp, jute, straw, wood, rice husk, wheat, barley oats, rye and cane etc are used in plastic preparation. The properties of thermoplastic such as lightweight, strength and stiffness to used in thermoplastics. The wheat varieties of the best quality parameter were K-402, K-9644, K-607, K-9551, K-9644, and K-1317.

Key-words: Biofuels, Biocomposite, Cornhusk, Domestication, Human Diet, Natural Fiber, Wheat flour

INTRODUCTION

Wheat is an energy provider so that it is mostly nutrient-rich, which contains protein, fiber and lipids, vitamins, minerals and phytochemicals are the main component of healthy diet. Wheat products are Cereals and bread were the main source of energy for all age groups, contributing 31% for adults, and of non-starch polysaccharides with bread alone contributing about a fifth of the average daily intake.

In addition cereals, including wheat, contribute significantly to the daily intake of protein, B vitamins, and iron. These high contributions of wheat to essential nutrients in the UK, a comparatively prosperous country with a varied diet, underline its importance to nutrition globally ^[1].

Limited data are available for less developed countries but some comments can be made. In India, the diets of the rural poor are based predominantly on cereals, which provide 80% of energy and other nutrients except for vitamins A and C. Cereals, therefore, require supplementation with other food groups such as pulses, vegetables, fruits, or animal products to make the diet more balanced and adequate, particularly to vitamin A, iron, and riboflavin. However, most suggested that the diets of the poor can also be improved to reduce the

How to cite this article

Rathore M, Mishra P, Devi S, Singh P, Khan K, Prakash HG. Wheat and its Importance of High Quality Protein that Effects the Human Health. SSR Inst. Int. J. Life Sci., 2020; 6(4): 2617-2622.



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incidence of major nutrient deficiencies such as vitamin A deficiency and iron deficiency anemia by replacing a cereal diet with mixed cereals, including millets ^[2,3].

Wheat grain composition about diet and health- To focus on components of direct relevance to human nutrition and health and compare data for two fractions, wholegrain and white flour ^[2,3]. We will also consider data on the locations of components within the different tissues of the grain, as this is relevant to their recovery in milling fractions, and briefly discuss the roles of grain components in diet and health. Some grain components, such as protein and B vitamins, have established roles in the growth and health of humans and these roles will not be discussed in detail here ^[3,4].

Protein content grain protein content is determined by genetic and environmental factors, notably the availability of nitrogen fertilization. The protein content of 12,600 lines in the USDA world wheat collection has been reported to range from 7% to 22% of the dry weight but generally varies from about 10–15% of the dry weight for wheat cultivars grown under field conditions ^[5-6]. The separate cultivars are bred for livestock and food; these may differ in protein content by about 2% protein when grown under the same conditions.

Protein nutritional quality is determined by the proportions of essential amino acids, as these cannot be synthesized by animals and hence must be provided in the diet. If only one essential amino acid is limiting, the others will be broken down and excreted resulting in restricted growth in humans and loss of nitrogen present in the diet. Ten amino acids are strictly essential lysine, isoleucine, leucine, phenylalanine, tyrosine, threonine, tryptophan, valine, histidine, and methionine ^[7,8]. However, cysteine is often also included as it can only be synthesized from methionine, with combined proportions of cysteine and methionine often being presented. The requirements for essential amino acids are lower for adults where amino acids are required only for maintenance, than for children, where they are also required for growth. Lipids are present only in a small extent in cereals but they have a significant effect on the quality and the texture of foods because of their ability to associate with proteins due to their amphipathic nature and with starch, forming inclusion complexes. In wheat, the maturing seed synthesizes fatty acids at different rates. The biosynthesis of lipids depends upon

acetyl coenzyme A. This important compound is involved in the synthesis of the acyl lipids such as glycerides, phospholipids, waxes, sphingosine lipids as well as the isoprenoid series. Malonyl-CoA is also utilized, together with NADPH, and further dehydration and condensation reactions occur to produce palmitic acid (C16:0), which can then be extended to stearic acid by another reaction. Synthesis of linoleic acid occurs in higher plants by two separate pathways in the presence of microsomal enzymes. Isopentenyl pyrophosphate is formed from mevalonic acid which in turn is synthesized from acetyl CoA ^[9,10]. It can form b-squalene and, from this compound, the characteristic steroid structures, of which cholesterol is a member, are produced, although in very small amounts. The germ has the highest amount of lipids (11%), but significant amounts are also associated with the bran and the starch and proteins of the endosperm. Complex polar lipids extracted by WSB (1-butanol saturated with water) account for about half the total lipids in the endosperm compared with about 23% in the bran and 17% in the germ, but the latter two contain more triglycerides. The bound lipids are mostly phosphatidyl choline, phosphatidyl ethanolamine and phosphatidyl serine, as well as lysophosphatidyl derivatives, where there is one free hydroxyl group on the glycerol moiety ^[11,12]. The principal sterols were identified as b-sitosterol, campesterol and C28 and C29 saturated sterols. Numerous studies have been carried out showing a high level of linoleate (C18:2) in both the total lipid and the triglycerides from the three fractions with lower amounts of palmitate (C16:0) and oleate (C18:1) ^[13,14].

MATERIALS AND METHODS

Sample preparation- To prepare the wheat samples from the crops were picked and threshed to remove the peels. We also noticed the physical property of wheat which varies from light brown color, soft and smooth & regular in size of grain to dark brown in color to soft rough in texture.

The seed samples were kept at a temperature of 25°C and relative humidity of approximately 85% in an air-conditioned laboratory overnight to attain temperature equilibrium of the seeds before measurement. The 12 samples of wheat seeds were analyzed for their proximate composition. All the work on this investigation was done in the laboratories of NIRS in the directorate of research, C. S. Azad University of Agriculture and



Technology, Kanpur (UP). The grain seed of wheat was collected from the legume section of Azad university of Agriculture & Technology, Kanpur. After cleaning and grading the seed samples were determined using NIRS-2500. For analysis, we should use three replications for each sample and used the average value for the spectrum calibration. We take 130 gm samples to analyze the sample it works from 400-2500 nm wavelength.

NIRS-2500 (Near Infrared) analysis- It is an instrument through, which Near Infrared (NIR) analysis a spectroscopic technique that makes use of the naturally occurring electromagnetic spectrum. This works in the region of the spectrum defined by wavelengths between 700 nm and 2500 nm. It is suited for the quantitative determination of the major constituents in most types of food and agricultural products.

Near Infrared light is directed onto a sample principle working instrument. The light is modified according to the composition of the sample and this modified light is detected (see transmission and reflectance below) ^[15,16]. The spectral modifications are converted to information regarding the composition of the sample of the crop. These conversion algorithms are called “calibrations” Infrared spectrum was got by using infrared light, which passes through the sample by following the transmission. The lights were reflected by the sample and follow the absorption properties, which can be extracted from the

reflectance. This spectroscopy can be analyzed the sample by transmittance is good for measuring cheese to obtain a representative measurement throughout the sample. For homogenous samples such as milk powder, the reflectance is ideal.

The research was conducted in the Laboratory with the help of NIRS-2500 instruments. According to the Table 1, there are eleven variety of wheat was evaluated among them there are eight characteristics, which was evaluated such as protein, moisture, carbohydrate, ash, fiber, ADF, NDF and vitamin-A. The mean of Protein is 16.65, moisture has 12.23, carbohydrate 7.01, ash 3.39, fiber 4.11, ADF 7.45, NDF 16.29 and Vitamin A has 27.49 mean. The values of the most characteristics were significantly ^[17-19].

RESULTS

The result in Table 1 shows the presence of protein, moisture, carbohydrate, ash, fiber, ADF, NDF and Vitamin A. In wheat seed, we evaluated thirteen varieties namely as K-9423, K-9107, K-1006, K-9351, K-9242, K-9006, K-1317, K-9644, K-1317, K-607, K-9162, K-307 and K-402. Although wheat is known for controlling obesity, this benefit is far more active in women than in men. Improves body Metabolism. When your body's metabolism is not functioning at an optimal level, it can lead to a variety and reduced the chronic Inflammation. Chronic inflammation refers to any inflammation that has lasted for a few months.

Table 1: Physical characteristics analyzed by NIRS-2500

S.No.	Wheat Variety	Protein (%)	Moisture (%)	Carbohydrate (%)	Ash (%)	Fiber (%)	ADF (%)	NDF (%)	Vitamin A (%)
1.	K-9423	15.34	13.25	6.53	3.71	4.11	7.47	17.76	27.67
2.	K-9107	15.28	13.34	6.43	3.70	4.10	7.52	17.73	27.79
3.	K-1006	15.31	13.31	6.47	3.71	4.10	7.52	17.75	27.73
4.	K-9351	15.49	13.42	6.47	3.71	4.12	7.39	17.90	27.04
5.	K-9242	15.37	13.28	6.55	3.70	4.11	7.44	17.80	27.41
6.	K-9006	15.29	13.27	6.46	3.71	4.11	7.50	17.74	28.16
7.	K-1317	15.33	13.41	6.41	3.70	4.11	7.49	17.75	27.79
8.	K-9644	15.35	13.20	6.61	3.72	4.12	7.54	17.90	27.41
9.	K-607	15.42	13.25	6.38	3.71	4.11	7.45	17.88	27.98

10.	K-9162	15.50	13.43	6.61	3.72	4.11	7.36	17.73	27.36
11.	K-307	15.30	13.38	6.43	3.72	4.12	7.53	17.74	27.62
12.	K-402	15.57	13.49	6.42	3.68	4.11	7.24	17.66	27.01
	Mean	16.65	12.23	7.01	3.39	4.11	7.45	16.29	27.49

In Table 2, we have evaluated the physical parameter of the wheat seed. It is very important such as color, size and texture of the different variety of seed. The size which ranges from regular to irregular color varies from

light brown to dark brown. The texture varies from soft and smooth to rough and smooth. Among them K-1006, K-9242, K-9644 and K-307 were dark brown in color and soft and rough in the parameter.

Table 2: Physical property of the wheat variety

S. No.	Wheat variety	Size	Color	Texture
1.	K-9423	regular	Light brown	Soft and Smooth
2.	K-9107	regular	Light brown	Soft and Smooth
3.	K-1006	regular	Dark brown	Soft and Rough
4.	K-9351	regular	Light brown	Soft and Smooth
5.	K-9242	regular	Dark brown	Soft and Rough
6.	K-9006	regular	Light brown	Soft and Smooth
7.	K-1317	regular	Light brown	Soft and Smooth
8.	K-9644	regular	Dark brown	Soft and Rough
9.	K-607	regular	Light brown	Soft and Smooth
10.	K-9162	regular	Light brown	Soft and Smooth
11.	K-307	regular	Dark brown	Soft and Rough
12.	K-402	regular	Light brown	Soft and Smooth

DISCUSSION

It was found that among these variety protein content and moisture was rich in K-402, K-9162 the carbohydrate content was higher in K-9242, K-1006 and K-9351. The ash content was higher in K-9644 and fiber was rich in K-9162, K-9644, The ADF and NDF K-307, K-9644, K-607, K-9242. The vitamin content was rich in K-K-1317, K-9107, and K-607.

According to Table 2, the regular, irregular rough and smooth wheat are studied boosts income and adds soil protection. One of the main advantages to wheat it is an

ideal fall cover crop that you can later decide to harvest as a cash crop.

It is an excellent double crop that leaves a lot of residues to keep the topsoil from washing away. Disease and pests are also rarely a problem^[20,21].

The protein quality, which is obtained from animal-source food proteins, is not equal even though they are all highly digestible in the human gastrointestinal tract. The wheat whey is often considered to be better than casein for muscle builders consuming protein powder after exercise.



The protein has a higher content of arginine, leucine, lysine and sulfur-containing AA (methionine and cysteine) than casein. Second, individual AA is released more rapidly from whey protein in the small intestine to support muscle protein synthesis immediately after exercise [22-24]. Thus, consumption of whey protein stimulated postprandial muscle protein accretion more effectively than casein or casein hydrolyzed in elderly men [24,25]. In addition, when supplemental whey protein (0.15 g protein per kg BW per day) was consumed for 24 weeks by postmenopausal women immediately after weight training, skeletal-muscle strength was consistently improved by 9%. In contrast, inconsistent results (including no change) in muscle strength were reported for elderly men who consumed a casein supplement (20 g per session; 3 sessions per week) immediately before and after resistance training. However, it is unknown whether such a pattern of casein supplementation is sufficient to sustain elevated levels of AA in the plasma to stimulate muscle protein synthesis.

CONCLUSIONS

Findings from wheat studies have been variable. Among thirteen wheat varieties protein, moisture rich varieties are K-402, carbohydrate-rich varieties are K-9644, ash content-rich in K-307, K-607, fiber was higher in K-9162, K-9351, ADF-rich in K-9644, K 1006, K-9107, and NDF was superior in K-9644, K-607, K-9242 and vitamin A rich in K 1317, K-9644, K1317. So these are nutrition rich varieties which effect the positive manner in human health.

The future aspects of the wheat crop are that during the present time the R & D sector was suffered from climatic changes such as drought, high temperature etc so that wheat breeder and researcher want to design such type of research framework which provides us efficiently data and authentic results, which improve the human health. We get energy and other valuable things from the food that we eat. Among the top food items, people always prefer taking the food that has the right amount of nutrients for a perfect diet. Fruits and vegetables are important things in food groups.

ACKNOWLEDGMENTS

This research was conducted at Directorate of research, the Chandra Shekhar Azad University of Agriculture & Technology, Kanpur under NAHEP Center for advanced agriculture Science & Technology on nutritional crops sponsored by ICAR, New Delhi. The financial assistance is

duly acknowledged and thanks for Director Research of the University for providing me with the research support.

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