

Original Research Article

## Development of Wheat Grass Powder Prepared by Different Drying Processes

Singh Pallavi, Singh Shikha

Research Scholar, Dept of Foods and Nutrition, Ethelind School of Home Science, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad-211007, Uttar Pradesh, India.

Corresponding Author: Singh Pallavi

Received: 29/03/2016

Revised: 25/04/2016

Accepted: 04/05/2016

### ABSTRACT

**Background:** The mature sprouts of Wheat seeds (*Triticum aestivum*) known as Wheat Grass and it is one grass that has been demonstrated to be of particular use to humans as a good nutritional source. Wheatgrass is a good source of calcium, iron, sodium, potassium, and magnesium, as well as trace minerals, all B vitamins, pro-vitamin A, vitamin E, and vitamin K. In addition, wheatgrass has seventeen amino acids, eight live enzymes, and chlorophyll.

**Objective:** This study was carried out with the objective i.e. to prepare wheat grass powder by using different drying methods.

**Materials and Methods:** Different drying methods used for preparation of wheat grass powder were 1) Hot air oven drying [50°C, 6 hr and 60°C, 5hr] 2) Microwave drying [600W, 15 min and 800 W, 10 min] 3) Vacuum oven drying [50°C, 25kPa, 6 hr]. Moisture content of different samples of wheat grass powder was analyzed to evaluate the best drying method for preparation of wheat grass powder.

**Results:** In moisture analysis microwave dried wheat grass powder [800W, 10 min] gave the lowest mean value of moisture (7.4) followed by microwave drying [600W, 15 min] (7.6), vacuum oven drying [50°C, 15hr, 6 hr] (7.83), hot air oven drying [60°C, 5 hr.] (8.0) and hot air oven drying [50°C, 6 hr] (8.50). Thus, it was observed that microwave drying method was the best in comparison to other methods to prepare the wheat grass powder.

**Keywords:** Wheat grass powder, Microwave drying, vacuum oven drying, hot air oven drying.

### INTRODUCTION

World population continues to grow; hunger and malnutrition becoming more prevalent in certain parts of the world, and the nutritional value of some commonly consumed foods declining due to nutritionally exhausted soils. So the people will increasingly have to look to alternative food sources, or nutritional food supplements, as a source of the readily absorbable vitamins, minerals, chlorophyll, and enzymes that they will need to maintain good health and enhanced immunity to disease. [1] Grasses have been known in many cultures worldwide to have

regenerative and health protecting properties for animals, including humans. Wheatgrass is a good source of calcium, iron, sodium, potassium, and magnesium, as well as trace minerals, all B vitamins, pro-vitamin A, vitamin E, and vitamin K. In addition, wheatgrass has seventeen amino acids, eight live enzymes, and chlorophyll. [2] Availability of Wheatgrass in Powder form has proven to be very convenient and effective. Wheat grass powder retains all important nutrients of wheat grass and having higher quantity of dietary fiber, cost effective and higher shelf life than wheat grass juice. Wheat grass powder can be

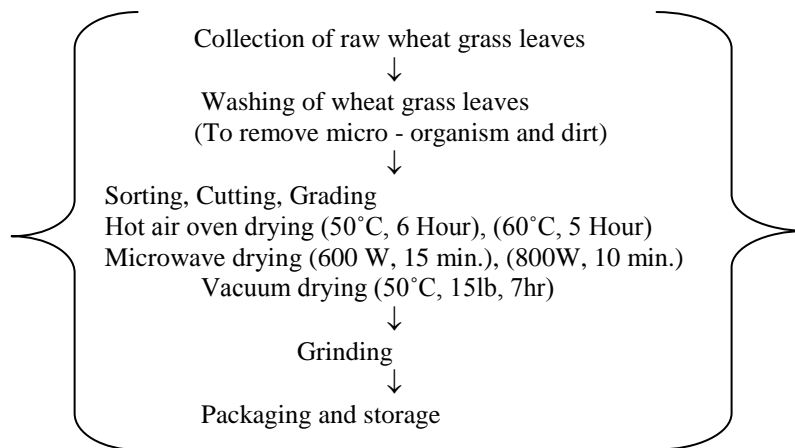
easily included in the daily life of every age group which can definitely increase their vitamins, minerals and antioxidants intake and in return it will protect the body from degenerative diseases [3]

## MATERIALS AND METHODS

The present investigation was conducted in the Research Laboratory of

Centre of Food Technology-University of Allahabad, Allahabad. The required wheat grass leaves grown indoors in the mud pots and it was cut when the wheatgrass growth was at the first node stage having length of 10-12 inches. This stage is known as pre-jointing stage.

### Method of preparation of Wheat Grass Powder by Different Drying Process



For the determination of moisture content of different samples of wheat grass powder, the sample was heated at specified temperature for specified period of time and the loss in weight was recorded as moisture content of the sample by applying following formula-

$$\text{Percent moisture content} = \frac{\text{loss in weight}}{\text{Initial weight of the sample}} \times 100$$

$$= \frac{W_1 - W_2}{W_1 - W} \times 100$$

F- Test was applied for analysis of variance to find the significant difference in the means of the sample.

## RESULTS

Table 1: Average moisture content (Percentage) of wheat grass powder obtained by different drying processes

DRYING VARIATIONS	N	Mean	Sd.	ANOVA	Sum of Squares	df	Mean Square	F cal (0.05)	F tab
HAO(50 C /6 H)	3	8.5000	.30000	Between Groups	732.933	4	1.972	31.81	3.48*
HAO(60 C /5 H)	3	8.0000	.10000	Within Groups	2180.66	10	.062		
MW(600 W/ 15 m)	3	7.6667	.15275	Total	2913.60	14			
MW(800 W/ 10 m)	3	7.3667	.15275						
VAC(1)	3	7.8333	.40415						
Total	15	7.5733	.77962						

\*Significant  $p \leq (0.05)$

The data illustrated in the above table shows that F cal (31.81) > F tab (3.48), then there is significant difference in the mean scores of the moisture in the samples of wheat grass powder obtained by different drying process. It is evident from the ANOVA table that the mean score of

moisture content of wheat grass powder obtained by hot air oven drying [50°C, 6 hr] is the highest (8.5) and is significantly ( $p \leq 0.05$ ) higher than the wheat grass powder prepared by hot air oven drying [60°C, 5 hr.] (8.0), microwave drying [600W, 15 min] (7.6), microwave drying [800W, 10 min]

(7.4) and vacuum oven drying [50°C, 15lb, 6 hr] (7.8). Thus the results indicate that microwave dried samples have minimum retention of moisture in the different samples of wheat grass powder which results in the maximum retention of the nutrient in the microwave dried samples of the wheat grass powder. So the microwave drying can be considered as best method for preparing wheat grass powder for adding its nutrients in our daily life. [4]

The experimental analysis clearly indicates that the % of the moisture varies with the type of drying methods used in the preparation of wheat grass powder and present study shows maximum % of moisture i.e. 8.5% found in hot air oven drying [50°C, 6 hr] [3] observed the average percentage of moisture in wheat grass powder was 6.8%. Another similar study about moisture percentage of wheat grass powder was also supported this finding. [2]

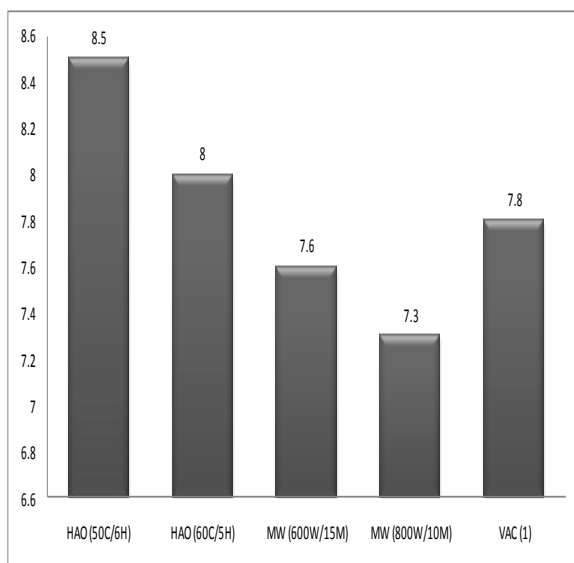


Figure No. 1: Moisture content of wheat grass powder obtained by different drying processes

## CONCLUSION

Among all the samples of wheat grass powder obtained by different drying

methods, microwave dried samples of wheat grass powder shows the minimum retention of moisture that results in maximum retention of the nutrients. So microwave drying is best method for preparation of wheat grass powder which is beneficial for the treatment of various degenerative diseases of humans.

## RECOMMENDATIONS

Higher utilization of the wheat grass, which hardly requires formal cultivation, is recommended to be encouraged. Traditionally, Wheatgrass is known to be taken in juice form but it is recommended to use the prepared wheat grass powder because it retains all important nutrients of wheat grass and having higher quantity of dietary fiber in contrast with wheat grass juice.

## REFERENCES

1. Das A, Raychaudhuri U and Chakraborty R (2011) Effect of freeze drying and oven drying on antioxidant properties of fresh wheatgrass. *International Journal of Food Sciences and Nutrition* 31(1):644-769.
2. James S and Phyllis A (2007) Compositional, Nutritional and Functional evaluation of Wheat Grass (*Triticumaestivum*). *Journal of Food Processing and Preservation* 15(1):63-77.
3. Kulkarni SD, Acharya R, Nair AGC, Rajurkar N and Reddy AVR (2006) Determination of elemental concentration profiles in tender wheatgrass (*Triticumaestivum* L.) using instrumental neutron activation analysis. *Food Chemistry* 95 (4):699-707.
4. Sagliano, Frank S and Elizabeth A (1998) Method for growing and preserving wheatgrass nutrients and products. U.S. Patent, 5820916.

How to cite this article: Singh P, Singh S. Development of wheat grass powder prepared by different drying processes. *Int J Health Sci Res.* 2016; 6(6):290-292.

\*\*\*\*\*