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Nutritional composition of dehydrated ashwagandha, shatavari, and ginger root powder

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Abstract

The main aim of this study is to analyze the nutritional composition and antioxidant content of the dehydrated medicinal herbs, for proximate analysis standard methods of AOAC (2007) were used. It was found that dehydrated Proximate analysis, minerals and vitamin content of dehydrated medicinal herbs powder Per 100 g. Nutrient composition of Ashwagandha root powder (*Per 100g*) obtained by chemical analysis is as follows, Moisture was found to be 7.45%, Ash was found to be 4.41g, the amount of Protein was 3.9g, Fat was 0.3g, the amount of Crude Fiber was 32.3g, Energy was 245Kcal, Carbohydrate was 49.9g, Iron was 3.3mg, the Calcium content was 23mg, Total carotene was 75.7 µg and Vitamin C was 5.8mg/100g.

Nutrient composition of Shatavari root powder (*Per 100g*) obtained by chemical analysis is as follows, Moisture was found to be 9.5%, Ash was found to be 3.55g, the amount of Protein was 2.47g, fat was 0.11g, the amount of Crude Fiber was 2.5g, Energy was 22Kcal, Carbohydrate was 3.39g, Iron was 2.17mg, the Calcium content was 26mg, Total carotene was 87.5 µg and Vitamin C was 3.7mg/100g.

Nutrient composition of Ginger root powder (*Per 100g*) obtained by chemical analysis is as follows moisture was found to be 13.3%, Ash was found to be 4.05g, the amount of Protein was 6.08g, fat was 3.6g, the amount of Crude Fiber was 20.1g, Energy was 214.12Kcal, Carbohydrate was 39.35g, Iron was 9.8mg, the Calcium content was 88.7mg, Total carotene was 76.7µg and Vitamin C was 9.2mg/100g. Polyphenols content was found to be 19.80 mg and Free radical scavenging activity (DPPH) was found to be 67.16% in Ashwagandha root powder while in Shatavari root powder Polyphenols was 5.78mg and Free radical scavenging activity (DPPH) was 77.3%. Polyphenols content was found to be 776.2mg and Free radical scavenging activity was found to be 73.52% in Ginger root powder.

Keywords: Nutritional and anti-oxidant content, medicinal herbs Ashwagandha, Ginger and Shatavari

1. Introduction

Ashwagandha (*Withania somnifera*) is a shrub that flourishes in India. Ashwagandha has many beneficial elements, including flavonoids. Ashwagandha contains different natural antioxidants: superoxide dismutase, catalase and glutathione peroxidase which are responsible as health promoters. It has been used to treat inflammation, fevers and to protect against infection or illness. It has been used to boost the immune system, improve memory and to promote overall wellness. (Mehta, 2013) [9] Shatavari (*Asparagus racemosus*) may constitute a very important component of as feed supplement in the animal diets because of their higher availability of nutrients like protein, crude fiber, ether extract, nitrogen free extract and ash content and minerals like Ca, Mg, Fe, Cu, Zinc etc. Ginger (*Zingiber officinale*) is extensively used around the world in foods as a spice. (Sharma and Sharma, 2013) [10]. Ginger (*Zingiber officinale Rosc.*) has been used as a spice for over 2000 years. Its roots and the obtained extracts contain polyphenol compounds. (Ghosh, 2011) [5]

2. Materials and Methods

Chemical analysis for proximate composition of moisture, ash, fat, protein and fibre of dehydrated Ashwagandha (*Withania somnifera*), Shatavari (*Asparagus racemosus*) and Ginger (*Zingiber officinale*) root powder and best treatment of developed food products were done by using standard methods of AOAC (2007) [2]. Iron was determined by using calorimetric method and calcium was determined by titration method respectively. Vitamin C was determined by 2, 6-Dichlorophenol dye method. Total carotene was assessed by the method of Ranganna (2001) [8]. Polyphenols by Folin-Ciocalteu phenol method and antioxidant, by DPPH Radical Scavenging Method (Brand *et al.*, 1995) [4].

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3. Results and Discussion

The experiment was conducted in the Nutritional Research Laboratory, Department of Foods and Nutrition, Ethelind School of Home Science, Sam Higginbottom Institute of Agriculture, Technology and Sciences (Deemed to be University) Allahabad, U.P.

From proximate analysis it was found that dehydrated medicinal herbs powder Per 100 g Nutrient composition of Ashwagandha root powder (*Per 100g*) obtained by chemical analysis is as follows, Moisture was found to be 7.45%, Ash was found to be 4.41g, the amount of Protein was 3.9g, Fat was 0.3g, the amount of Crude Fiber was 32.3g, Energy was 245Kcal, Carbohydrate was 49.9g, Iron was 3.3mg, the Calcium content was 23mg, Total carotene was 75.7 µg and Vitamin C was 5.8mg/100g.

Nutrient composition of Shatavari root powder (*Per 100g*) obtained by chemical analysis is as follows, Moisture was found to be 9.5%, Ash was found to be 3.55g, the amount of Protein was 2.47g, fat was 0.11g, the amount of Crude Fiber was 2.5g, Energy was 22Kcal, Carbohydrate was 3.39g, Iron was 2.17mg, the Calcium content was 26mg, Total carotene was 87.5 µg and Vitamin C was 3.7mg/100g.

Nutrient composition of Ginger root powder (*Per 100g*) obtained by chemical analysis is as follows moisture was found to be 13.3%, Ash was found to be 4.05g, the amount of Protein was 6.08g, fat was 3.6g, the amount of Crude Fiber was 20.1g, Energy was 214.12Kcal, Carbohydrate was 39.35g, Iron was 9.8mg, the Calcium content was 88.7mg, Total carotene was 76.7µg and Vitamin C was 9.2mg/100g.

Polyphenols content was found to be 19.80 mg and Free radical scavenging activity (DPPH) was found to be 67.16% in Ashwagandha root powder while in Shatavari root powder Polyphenols was 5.78mg and Free radical scavenging activity (DPPH) was 77.3%. Polyphenols content was found to be 776.2mg and Free radical scavenging activity was found to be 73.52% in Ginger root powder.

Table 1: Proximate analysis, minerals and vitamin content of dehydrated medicinal herbs powder *Per 100 g*

Nutritive Values	Ashwagandha root powder	Shatavari root powder	Ginger root powder
Moisture (%)	7.45	9.57	13.03
Ash (g)	4.41	3.55	4.05
Protein (g)	3.9	2.47	6.08
Fat(g)	0.3	0.11	3.6
Crude Fiber (g)	32.3	2.5	20.1
Energy (kcal)	245	22	214
Carbohydrate (g)	49.9	3.39	39.35
Iron (mg)	3.3	2.17	9.8
Calcium(mg)	23	26	88.7
Total carotene(µg)	75.7	87.5	76.7
Vitamin C (mg)	3.7	5.8	9.2

Table 2: Proximate analysis, antioxidant content of dehydrated medicinal herbs powder *Per 100 g*

Nutrients	Ashwagandha root powder	Shatavari root powder	Ginger root powder
Polyphenols (mg)	19.80	5.78	776.2
Free radical scavenging activity (DPPH) %	67.16	77.3	73.52

4. Conclusion

On the basis of findings, it is concluded that dehydrated medicinal herbs Ashwagandha, Ginger Shatavari. Sensory evaluation showed that the treatment T₂ (5% ashwagandha+ 5% ginger+ 10% Shatavari + 80% refined besan) was the most

acceptable in cheela and in cookies ; showed that the treatment T₁ (2.5% ashwagandha+ 2.5% ginger+ 5% Shatavari + 90% refined wheat flour) was found most highly acceptable. The content of carbohydrates energy in The Nutrients calculation of prepared products (*Cheela* and *Cookies*) showed that the Protein, fat, Crude Fiber, Energy, Carbohydrate, Iron, Calcium and vitamin C content of the prepared products were increased by the incorporation of medicinal root powder with besan in *cheela* and with refined wheat flour in *cookies*. The antioxidant content such as total polyphenol and anti radical scavenging activity were also increased significantly in *cheela* and *cookies*. As the Incorporation level of the dehydrated Medicinal herbs leaves increased, the cost of prepared products decreased.

5. Recommendations

- Ashwagandha, ginger and Shatavari root powder with besan and refined wheat flour makes up for the deficiency of dietary fiber and good quality of antioxidant, Polyphenols and Vitamin C.
- It consider the medicinal properties reported by other researchers, to the product which can be used against heart diseases, osteoarthritis, anxiety, type 2 diabetes and certain types of cancer.
- Incorporation of ashwagandha, ginger and Shatavari root powder can be recommended to be including in preparation of foods of the daily diet of the individuals so that the many benefits of these are available to the consumers under both normal and therapeutic conditions.

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