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Economic upgradation of tribes through processing of sweet potato

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Abstract
Sweet potatoes have been proved to be highly effective way of providing school age children with sizable amounts of their daily Vitamin A requirement. In some studies, sweet potatoes have been shown to be a better source of bioavailable beta carotene than green leafy vegetables. Yet beta carotene only begins to tell the story of sweet potato antioxidants. Particularly in purple fleshed sweet potatoes and these antioxidant nutrients may be even more concentrated in the flesh than in the skin. That's sweet potatoes have genes (IbMYB1 and IbMyB2) that are specialized for the production of anthocyanin pigments in the fleshy part of the tuber. Storage proteins in sweet poato also have important antioxidant properties. These storage proteins called sporamins get produce by sweet potato plants whenever the plants are subjected to physical damage. In Gadchiroli district, the tribals of Mulchera Thisil;, use to cultivate sweet potato from ages and now Self Help Group of these Villages are involved in processing of sweet potatoes in which they are mostly preparing powder of sweet potatoes which is utilized by Bakery and Icream industries with that they are preparing various edibles from sweet potatoes. The present investigation of this study is women of this area are involved in processing of sweet potato which not only helps to increase the economic condition but also nutrition security of the tribal household.

Keywords: Antioxidant, self- help group

Introduction
Sweet potato, *Ipomoea batatas* L. (Lam.), is an important economic crop in many countries. In terms of annual production, sweet potato ranks as the fifth most important food crop in the tropics and the seventh in the world food production after wheat, rice, maize, potato, barley, and cassava (FAO 2016) [9]. Sweet potato fulfills a number of basic roles in the global food system, all of which have fundamental implications for meeting food requirements, reducing poverty, and increasing food security (El-Sheikha and Ray 2017) [10].
Sweet potato (*Ipomeas batatas* (L.) Lam.) is among the world's most important, versatile, and unexploited food crops. With more than 133 million tons in annual production, sweet potato currently ranks as the fifth most important food crop on a fresh- weight basis in developing countries after rice, wheat, maize and cassava (FAO 2003) [8]. Only in the last decade has the crop been the focus of an intense, coordinated, global effort to realize its full potential as a source of food, feed, processed products, and income for millions of small farmers and low-income consumers.
Sweet potato is used for human consumption, as livestock feed, and in industrial processes to make alcohol and starch. Sweet potato is high in carbohydrates. The orange-flesh varieties also provide vitamins A and C.
Sweet potatoes are beneficial for diabetic because they have a low glycemic index. Packed with beta carotene and vitamin A, one serving of sweet potatoes provides more beta carotene than 23 cups of broccoli! Unlike other starchy root vegetables, it is very low in sugar, and in fact is a good blood sugar regulator, helps to stabilize and lower insulin resistance.
Gadchiroli district is categorized as a tribal and undeveloped district and most of the land is covered with forest and hills. Forests cover more than 79.36 % of the geographical area of the district. This district is famous for bamboo and tendu leaves. Paddy is the main agricultural product of the district. The agriculture products of the district are jowar, linseed, tur, and wheat. The main profession of the people is farming, there is no large scale industry in the district except the paper mill at Ashti in Chamorshi Taluka, and the paper pulp factory at Desaiganj. There are many rice mills in the district.

The Tussar silk worm centre is in Armori Taluka., the tribals of Mulchera Thisil;, use to cultivate sweet potato from ages and now Self Help Group of these Villages are involved in processing of sweet potatoes in which they are mostly preparing powder of sweet potatoes which is utilized by Bakery and Icream industries with that they are preparing various edibles from sweet potatoes.

Sweet potatoes are a healthy food, not only it taste like dessert, but also it provides some surprising healthy benefits too. Some nutritional benefits from sweet potatoes simply may not be achievable unless you use steaming, boiling or roasting as your cooking method.

Objectives

1. Economical up gradation of the tribal people of Gadchiroli district.
2. Value addition of Sweet Potatoes.

Methods and Materials

The Self Help Group of Labhan Tanda village of Mulcherchra Thisil, Dist. Gadchiroli is involved in processing of Sweet potato as they prepare Finger chips, Sweet potato wada, chips and sweet potato powder. This sweet potato powder is used in bakery and ice-cream industries. Initially raw sweet potatoes were analyzed for their nutritional content by AOAC (Association of official analytical chemist) method. Protein, fat, carbohydrate, calcium, iron, folic acid, vitmin A were analyzed. Then various cooking methods were used for cooking sweet potatoes i.e. boiling, partial boiling and roasting. After these treatments they were analyzed separately by AOAC method and their results are presented.

Results and Discussion

Sweet potatoes have so many unique nutritional benefits such as antioxidant, anti- inflammatory nutrients, blood sugar regulating nutrients each categories bring with it a healthy benefits.

Table 1: Proximate composition of Sweet Potato

Test Parameters	Measurement Unit	Result
		Raw
Carbohydrates	%w/w	28.2
Fat	%w/w	0.3
Protein	%w/w	1.2
Iron	mg/g	0.21
Folic acid	mg/g	-
Calcium	mg/g	46
Vitamin A	mg/g	0.04
Moisture	%w/w	68.5
Crude Fibre	%w/w	0.8

In the present study various cooking methods were analyzed by AOAC method and results are given in table no.2, 3 and 4.

Table 2: Raw Sweet Potato analysed by AOAC Method.

Test Parameters	Measurement Unit	Result
		Raw
Carbohydrates	%w/w	88.17
Fat	%w/w	0.60
Protein	%w/w	4.69
Iron	mg/g	0.3
Folic acid	mg/g	<0.01
Calcium	mg/g	1.8
Vitamin A	mg/g	0.03
Moisture	%w/w	4.05
Crude Fibre	%w/w	2.27

As per the above table raw sweet potatoes are rich in Carbohydrate and proteins.

Table 3: Results of Partially Boiled and Whole Boiled Sweet Potato

Test Parameters	Measurement Unit	Result	
		Partially Boiled	Whole Boiled
Carbohydrates	%w/w	87.6	88.5
Fat	%w/w	0.57	0.39
Protein	%w/w	5.44	5.00
Iron	mg/g	1.6	0.06
Folic acid	mg/g	<0.01	<0.01
Calcium	mg/g	1.8	1.9
Vitamin A	mg/g	0.025	0.028
Moisture	%w/w	4.11	3.75
Crude Fibre	%w/w	1.93	2.16

According to this table partially boiled sweet potato contain high nutritive value as compare to whole boiled.

Table 4: Result of Roasted Sweet Potato

Test Parameters	Measurement Unit	Result
		Roasted
Carbohydrates	%w/w	88.17
Fat	%w/w	0.42
Protein	%w/w	5.48
Iron	mg/g	0.013
Folic acid	mg/g	<0.01
Calcium	mg/g	1.7
Vitamin A	mg/g	0.031
Moisture	%w/w	3.66
Crude Fibre	%w/w	2.08

In case of Roasted method sweet potato is good source of Carbohydrate, Protein and somewhat Calcium.

Hence from the above table no. 2, 3 and 4 it is found out that sweet potatoes are very good source of carbohydrates and proteins and also contain little amount of Calcium.

Conclusion

It is found that locally cultivated Sweet potatoes contain high amount of Carbohydrates and proteins along with Calcium and Iron, as Sweet potatoes have genes (IbMYB1 and IbMyB2) that are specialized for the production of anthocyanin pigments in the fleshy part of the tuber. Sweet potatoes are beneficial for diabetic's patient also.

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