



Standardization, value addition and sensory evaluation of products prepared from insulin plant leaves (*Costus igneus*)

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Abstract

A study was conducted to standardize value addition and sensory evaluation of products prepared from insulin plant leaves (*Costus igneus*). *Costus igneus* a medicinal plant is a magic cure for diabetics. Its leaves helps to build up insulin in the human body so it is commonly known as insulin plant. The study focused on the incorporation of fresh and dry leaves in the preparation of food products, to standardize the recipes prepared from the fresh and dried leaves and to evaluate the products. Sample was called from the local garden of Dharwad. Five recipes were prepared out of leaves, parota, khidi, cutlet, wada and chutney. The results revealed that all the attributes like appearance, colour, taste, texture, consistency and overall acceptability was excellent, good. There was no significant difference between fresh/dry insulin leaves products. The study concluded that use of insulin leaves on daily basis is advisable. Further studies could be conducted on effect of heat on the release of insulin and its impact on glucose levels.

Keywords: *Costus igneus*, diabetics, Dharwad

Introduction

Costus igneus a medicinal plant is a Magic Cure for Diabetes. Its leaves helps to build up insulin in the human body so it is commonly known as insulin plant in India. This plant was grown in America and is becoming popular in India because of its medicinal chemicals. It is now accepted and used widely as an Ayurvedic medicinal herb. Consumption of the leaves are believed to lower blood glucose levels, and diabetics who consumed the leaves of this plant did report a fall in their blood glucose levels. Insulin plant (*Costus igneus*) is native to Southeast Asia, especially on the Greater Sunda Islands in Indonesia. It is a relatively new entrant to Kerala and India. The plant is characterized by large fleshy looking leaves. The undersides of these large, smooth, dark green leaves have light purple shade. The leaves are spirally arranged around the stem, forming attractive, arching clumps arising from underground rootstocks. The maximum height of these plants is about two feet. The flowers are orange in color and are beautiful, 1.5-inch diameter. Flowering occurs during the warm months. And they appear to be cone-like heads at the tips of branches. The flower petals are quite sweet and nutritious. It's a lower grower and makes a great ground cover. The long red flower spikes of *Costus pulverulentus* are unique to the family. *Costus igneus* plant grows very quickly. Propagation of this plant is by stem cutting. It needs sunshine but it also grows in slightly shady areas. *Costus* does not have a problem with pests and diseases. Outdoor plants might be chewed by caterpillars and in indoors plants might be affected by red spider mite.

Medicinal use

In Ayurvedic treatment diabetes patients are advised to chew down the Insulin plants leaves for a month. The patient has to

take two leaves per day in the morning and evening for one week. The leaves must be chewed well before swallowing. After one week the patient should take one leaf each in the morning and evening. This dosage should be continued for 30 days. Allopathic doctors too recommend it and it is found to be effect in bringing blood sugar levels completely under control. In Traditional Medicine it is also used to Promotes longevity, Treats rash, Reduces fever, Treats asthma, Treats bronchitis and Eliminates intestinal worms.

Importance of this study

There have been many studies on medicinal analysis of action of insulin however there are no studies on dietary aspects and product evaluation. Knowing its importance medicinal use the present study was aimed with the following objectives:

1. To incorporate the fresh and dried insulin leaves in the preparation of food products
2. To standardize the recipes prepared from the fresh and dried insulin products.
3. To evaluate the standardized products.

Methodology

A study on standardization and value addition and sensory evaluation of insulin plant leaves was undertaken during the academic year 2014.

Collection of sample

1 kg of Insulin plant leaves were collected from the garden of Dr. Renuka Meti residing at Dharwad. The Insulin plant leaves were cleaned free from the dust and other waste particles, cleaned thoroughly and stored 1 kg of insulin plant leaves in plastic containers in the deep freezer under the evaluation.

Processing and preparation of insulin plant leave power

Insulin plant leaves were sun-dried for 2 to 3 days thereafter oven dried (60 + 5c for 2 min.). They were then ground into fine powder in a semi-automatic grinder and the powder was stored in airtight containers for further use.

For development of food products and evaluation the recipes were selected with the motive to make it suitable for persons suffering from diabetes keeping in mind availability of ingredients and easy in preparation. Based on the local taste

on insulin plant the five recipes were finalized they are, Parota, khichadi, cutlet, wada and chutney were prepared incorporating insulin plant leaves as a raw or powder form. One standard recipe was prepared and two variants like incorporation of fresh leaf and 5 g dry powder per serving was prepared. The sensory evaluation was carried out through a panel of 10 judges on a 5 point hedonic scale for the following attributes appearance, colour, texture flavor and overall acceptability

Table 1

Sl. No.	Product name	Standard	Variation 1 (fresh) 1 leaf/serving	Variation 2 (dry) 5 g / serving
1	Parota	Wheat flour	Wheat flour + Insulin leaf	Wheat flour + Insulin leaf
2	Chutney	Coconut + Roasted Bengal gram	Coconut + Roasted Bengal gram	Coconut + Roasted Bengal gram
3	Khichadi	Rice + Green Gram	Rice + Green Gram	Rice + Green Gram
4	Cutlet	Carrot + Potato + Beetroot	Carrot + Potato + Beetroot	Carrot + Potato + Beetroot
5	Wada	Urad Dal + Onion	Urad Dal + Onion	Urad Dal + Onion

Results

The scores of the sensory evaluation of five prepared products from the Insulin Plant Leaves are presented below.

Table 2: Sensory evaluation of Parota incorporated with insulin leaf

Sl. No.	Recipes	Standard	Variation 1	Variation 2	Acceptability
1	Appearance	5	4	5	5
2	Colour	4	5	5	5
3	Flavor	5	4	5	5
4	Texture	5	5	4	5
5	Taste	5	4	4	5

Table 3: Sensory evaluation of Khichadi incorporated with insulin leaf

Sl. No.	Recipes	Standard	Variation 1	Variation 2	Acceptability
1	Appearance	4	4	5	5
2	Colour	5	5	5	5
3	Flavor	5	4	4	5
4	Texture	4	5	4	5
5	Taste	5	4	5	5

Table 4: Sensory evaluation of Chutney incorporated with insulin leaf

Sl. No.	Recipes	Standard	Variation 1	Variation 2	Acceptability
1	Appearance	4	4	5	5
2	Colour	5	5	5	5
3	Flavor	5	4	4	5
4	Texture	4	5	4	5
5	Taste	5	4	5	5

Table 5: Sensory evaluation of Wada incorporated with insulin leaf

Sl. No.	Recipes	Standard	Variation 1	Variation 2	Acceptability
1	Appearance	5	4	4	5
2	Colour	4	4	3	5
3	Flavor	5	5	5	5
4	Texture	4	4	4	5
5	Taste	5	4	3	5

Table 6: Sensory evaluation of Cutlet incorporated with insulin leaf

Sl. No.	Recipes	Standard	Variation 1	Variation 2	Acceptability
1	Appearance	5	4	5	5
2	Colour	4	4	5	5
3	Flavor	5	5	5	5
4	Texture	4	4	4	5
5	Taste	5	5	5	5

Table 7: Sensory evaluation of Cutlet incorporated with insulin leaf

Sl. No.	Recipes	Appearance	Colour	Taste	Texture	Acceptability
1	Insulin plant leaf Parota	5	5	5	5	5
2	Insulin plant leaf Khichadi	5	5	4	3	5
3	Insulin plant leaf Chutney	5	5	5	5	5
4	Insulin plant leaf Cutlet	5	4	5	4	5
5	Insulin plant leaf Wada	5	5	5	4	5

Excellent-5, Very good-4, Good-3, Fair-2

Discussion

From the results from the above tables it is evident that all the attributes for all the products scored excellent, very good and good. The different products were accepted very well by the panelists. There was no significant differences between the dry and fresh products with respect to taste, colour, appearance, texture and flavor. There was not much variation even from the standard products. Hence the present study recommends that insulin leaves could be incorporated very well in the different preparations for the people who cannot consume raw leaves which may have some kind of stomach upset observed. Further research can be carried out on consumption of prepared products on the level of sugar on the blood.

Conclusion

The incorporation of fresh and dry insulin leaves in the preparation of food products are accepted well for daily consumption in the treatment of diabetes. Therefore, new innovations such as promoting the use of dry and fresh leaves of insulin plant as a therapeutic supplement can be used to decrease diabetes. In the present day's majority of populations are suffering from type II diabetes. The physicians always put them on insulin injections or tablets, but on the long run there may be complications due to side effects hence the present study throws light on use of natural plant leaves as insulin which will not have any side effects and it is safe for consumption for years. It can be concluded that all the professionals who are involved in the health care could follow some basic values and ethics to promote our indigenous products which are safe for consumption instead of allopathic products.

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