REVIEW OF RESEARCH
ISSN: 2249-894X
IMPACT FACTOR : 5.7631(UIF)

NUTRITIOUS FOOD: KARANDYA AND KHONDGHI

Rajaram G. Chugale
Assistant Professor in Chemistry, Br. Balasaheb Khardekar College,Vengurla.

ABSTRACT:-

The phenolic compounds i.e. flavonoid components contained in certain foods have potential health benefits. Some edible tuber species have beneficial effect of consumption on human health. The Karandya(Air Yam) and Khondghi (Lesser Yam) tubers extract was performed for natural minerals (elements such as Copper, Magnesium, Zinc, Iron, Lead etc.), Sulphate, Free glucose, Carbohydrates, Proteins and Acidity, Conductance, pH, E.M.F. and O.D. etc. These contents and parameters in the two stem and root tubers were correlated.

KEY WORDS: *Antioxidants, Natural minerals, Tubers consumption and health benefits.*

INTRODUCTION:

Karandya / Air Yam /Air Potato (Dioscorea bulbifera) aerial stem tubers are oblong in shape like Potatoes and show hairy covering. Some varieties are bitter in taste but it can be removed by boiling or cooking. Some varieties are edible and cultivated as food crop especially in West Africa.[2] Uncultivated forms such as those found growing wild in Florida can be poisonous. These varieties contain the steroid diosgenin. Which is a principal material used in the manufacture of a number of synthetic steroidal hormones. Such as those used in hormonal contraception.[2] The aerial bulbs contains some toxics like alkaloid dioscrorine, destroyed by through cooking.[3]

Phytochemistry:The pharmacologically active substances are presents in Dioscorea bulbifera .(i) It is very good source of antioxidant.(ii) It shows presence of flavonoids (antioxidant). Saponins (natural antibiotics),Cardiac glycosides and terpenoids.Cardiac glycosides have been used as stimulant in cardiac failure (iii) It shows presence of steroidal drug is diosgenin. Which is used as a precursor for the synthesis of hormones and corticosteroids which improves fertility in men.

Medicinal Uses: (i) Dioscorea bulbifera shows analgesic and anti-inflammatory property. (ii) Air yam has been used as a folk remedy to treat conjunctivitis, diarrhea (diuretic) and dysentery (antibacterial activity and gastroprotective in function), among other ailments (haemorrhoids, reduced risk of fungal infection) [2]Khondghi / Lesser Yam: (Dioscorea esculenta) underground (root) tuber looks like sweet potato, their covering is much hairy. These tubers are consumed by boiling specially on fasting. These species is known as hungry yam among agronomists. [2] These are also used as vegetable.

Result and Discussion: The alcoholic water extract Karandya reddish yellow in color while Khondghi is white in color.

Some contents were found in tubers. Parameter estimated for tuber samples employing the standard methods.[1]

Sr.No.	Parameter Studied	Method Used	Karandya	Khondghi
1	Cu2+	Na2S2O3 method, starch indicator (Iodometry)	Nil	Nil
2	Pb2+	0.02M E.D.T.A, Xylenol Orange indicator	0.038gm/1gm	0.041 gm/1gm
3	Mg2+ Mg2+	0.02M E.D.T.A, Eriochrome black T indicator Ion exchange chromatography (anion exchanger)	0.004gm/1gm 0.044gm	0.003gm/1gm 0.036gm
4	Zn2+	Ion exchange chromatography (anion exchanger)	0.105gm	0.052gm
5	Free Glucose Starch (Carbohydrate)	Wilstater Method Iodine reagent (qualitative)	Nil Less quantity	1.31gm/1gm More quantity
6	Free Acidity	NaOH, Phenolphthalein	1.315mg/1mg	2.917mg/1mg
7	Ni2+	0.02M E.D.T.A,Murexide indicator	Nil	0.020gm/1gm
8	Fe2+ Fe3+	K2Cr2O7 ,Titration 5% K4Fe(CN)6	0.063gm/1gm Nil	0.042gm/1gm Nil
9	SO42- Cysteine, Cystine and Methionine	Reaction with BaCl2 Sulphur reaction (Qualitative)	Nil Nil	Nil Nil
10	O.D. Flavonids	Colorimeter	4.687 µg/cm3	Nil
11	Conductance	Conductometry	0.468x10-3	0.700x10-3
12	pH	pH-Metry	7.65	8.43
13	EMF	Potentiometry (weak acid-Quinhydrone Electrode)	-0.04V	-0.19V
14	Ca+2	Qualitative	Nil	Nil

1. The Copper is absent in both tubers. Higher concentration of Copper causes stomach and internal distress, Wilson's disease so it possesses gastro protective in function.[4]
2. Lead is in minute quantity,if Blood Lead level of 0.8 to 0.1 µg per dm^3 can inhibit enzymatic actions. Therefor Lead is must removed by cooking or boiling of tubers.
3. Magnesium: It helps in proper function of nerves and muscles (impulse transmissions) of human body. Magnesiuminhibits Type -2 diabetes it may due to impulse transmission in muscle. Its deficiency caused neuromuscular irritation.
4. Zinc is used in enzymes and control cell growth division function (RNA and DNA). High Zinc in body cause irritation and damage mucus membrane, gastric ulcer, pancreatitis.[4]
5. Khondghi is rich source of proteins and contains Starch (carbohydrate) as compare to Karandya.
6. Nickel: In Air potato Nickel were absent, where in Lesser yam tuber trace quantity of Nickel were found. High Nickel in a body cause cancer of lung and sinus. Therefore Air yam has more nutritional value than Lesser yam
7. Iron: Iron is essential element, integral part of hemoglobin and oxygen transport system in human body. Metal ions promote the antioxidant property of Air yam tuber. The antioxidant (flavonoids) of tuber prevents oxidation reaction by chelating free Iron(III). Therefore Fe (III) is absent in both tubers.
8. In tubers sulphur containing aminoacids – Cysteine and Methionine were absent.
9. By Optical density measurement the Karandya containsphenolic compounds(flavonoids) 4.687 µg per cm^3. In Khondghi the flavonoids were absent.
10. Conductivity is indirect measurement of mineral content in tubers. More the conductance value more will be amount of natural minerals.
11. pH due to acidity and free CO_2 (Carbonic acid). The pH of tubers is greater than pH of gastric juice (about pH=1.5) The relatively acidic pH level prevents the growth of many bacteria.
12. Redox Potential is developed which depends upon H^+ ion concentration (strength). The electrode works well in the pH range 1 to 8. [5] The tubers not contains oxidizing or reducing compounds.[5]
13. (Qualitative study) Color reactions of Proteins[6] due to the presence of one or more radical or groups of the complex protein molecule. All proteins do not contain the same amino acids.
i) Biuret test: It is positive to khondghi indicates the presence of peptide linkage.
ii) Ninhydrin test: It is positive to Khondghi indicates presence of proteins, peptides or aminoacids.
iii) Xanthoproteic Reaction: The Nitro compounds from protein molecules containing benzene ring responds. This reaction is positive indicates presence of aromatic aminoacids (Tyrosine, Tryptophan and Phenylalnine) were present in Khondghi as well as in Karandya.
iv) Sakaguchi Reaction: The Arginine were present in Khondghi.

EXPERIMENTAL:

The extracts were obtained from 25 gm tuber in ethylalcohol and distilled water, where heated to boil. Then these alcoholic water extracts made 250 cm^3 for each. 10 cm^3 of volume were used for estimations. The alcoholic water extract of these tubers were kept in dark place and cooled condition during experimental work.

CONCLUSION:

The Karandya has pharmacologically potent (medicinal value) and have low or no side effect so it is natural folk remedy to ailments. Khondghi is rich of proteins and minerals, Starch (carbohydrates) were consumed in fasting.

ACKNOWLEDGEMENT:

The auther is thankful to the Principal Br.B.K.College, Vengurla for providing necessary laboratory facilities to carry out this work and also to Mr.Sanjay Parab for providing Karandya and Khondghi tubers.

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