UPI Journal of Pharmaceutical Medical, and Health Sciences

Content Availabe at www.uniquepubinternational.com ISSN: 2581-4532

Research Article

Effect of okra (ladies finger) juice for regulating blood sugar level-an evidence based case study

Chandershekar .A [1]*, Bhasker .A [2], Dr Mekkanti ManasaRekha[3], Dr Rinku Mathappan[4]

[1] Third year B. Pharmacy , Gautham College of Pharmacy, RT Nagar ,Bangalore ,Karnataka , India.

[2] Third year B. Pharmacy ,Gautham College of Pharmacy, RT Nagar, Bangalore ,Karnataka, India.

[3] Assistance Professor, Department of Pharmacy Practice, Gautham College of Pharmacy, RT .Nagar, Bangalore, Karnataka, India.

[4] Principal and Professor, Department of Pharmacognosy, Gautham College of Pharmacy, RT Nagar Bangalore, Karnataka, India.

Article History

Received on: 15-01-2020
Revised on : 08-03-2020
Accepted on : 10-03-2020

Keywords

Okra, A. Esculentus, hyperglycaemia Abelmoscusesculentus, alpha glucosidase and alpha amylase enzyme.

***Corresponding Author**

Chandershekar.A

Email: chandershekar5768@gmail.com

https://doi.org/10.37022/jpmhs.v3i1.18

Abstract

Diabetes mellitus can manifest due to resistance of peripheral receptors to insulin or increased indigenous glucose production by liver (hyperglycaemia).It is caused by inherited or acquired deficiency in production of insulin by pancreaseokra abelmoschusesclentus L (moench) is an important vegetable crop this plant has been acclaimed to have various health benefits which include to have various health benefits which include anti-diabetic properties. The present study proved that Okra is a naturalproduct and it has anti-diabetic activity so the usage of the soaked l. Okra water is not harmful to human health. An alpha glucosidase and alpha -amylase enzyme effects in aqueous extract's of Abelmoscusesculentus, to provide an evidence for anti- diabetic activity through potential inhibition of alpha glucosidase and slpha amylase enzyme using the aqueous extract, peel and seed. Other extraction method like, the powdered peel and seed were used for the preparation of aqueous extract. And found that peel and seed showed appreciable alpha glucosidase [IC50= (124.96± 0.32) mg/dl and (142.47±0.28) mg/dl] and alpha amylase [(IC50= (123.36±0.16) mg/dl and (136.23±0.21) mg/dl].And inhibitory effect in a concentration dependent and soaking in water methods are confirmed and shows hypoglycemic effect in A. Esculentus (lady's finger).

This article is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License.
Copyright © 2020 Author(s) retain the copyright of this article.

Introduction

Diabetes mellitus is a leading non-communicable disease with multiple etiologists. It is a variable disorder of carbohydrate metabolism caused by a combination of hereditary &environmental factors, characterized by inadequate secretion or utilization or insulin, by excessive urine production, &amounts of sugar in blood & urine [1, 2].

Types

Type1 diabetes mellitus
Type2 diabetes mellitus

Causes

Genetic defects, diseases in pancreas, Random blood glucose test, glycohemogloin, lipid profile [3].

Oral Anti Diabetic Agent

Metformin, Sulfonylureas, Meglitinides, Thiazolidinediones, OPP-4 GLP-1 Insulin therapy etc [3].

Complications

Heart & blood vessel disease, neuropathy, kidney damage, eye damage, foot damage, hearing impairment, skin condition, Alzheimer's disease3 Complementary therapies can help to restate the body's natural equilibrium & balance &when the body is relaxed &in balance it can cope with the everyday stress &strain of life much more effectively. It can boost the immune system, helps in eliminating tocins,relive pain, improve circulation, improve sleep patterns, increase energy levels etc diabetes mellitus, affects more than 100 million people worldwide & is one of the five leading cause of death in the world. It's a metabolic disorder affecting carbohydrates, fat and protein metabolism [4, 5]. It's progressive metabolic disease it was affected considerable percentage of population throughout world.

Epidemiologic dada indicated that 28 percent of the world's population was diabetic in year 2000 & how it's about 5.4percent in 2019 & it may progress to 8.9percent of the world population by 2030 it affects all age groups of people & ethnic groups. Indian statistical analysis revealed that the about 17 million diabetes were there in 2000 will rise to 57 million in the year of 20256.

Lady's finger is considered one of the most popular variable disorders of carbohydrate metabolism cause by a hereditary & environmental factors & usually characterized by inadequate secretion or utilizations of insulin, excessive urine production excessive amount of sugar in the blood & urine thirst hanger & loss of weight. The mucilage and superior fibre found in lady's finger is to stabilise blood sugar as it curbs the rate at which sugar is absorbed from the intestinal tract, lady's finger is a member of rate at which sugar is absorbed from the intestinal tract Lady ls finger is a member family Malvaceae, and originate from South east part of North America [7].

Okra (blemishesesculents) also know as ladies finger or gumbuis a tropical vegetable belonging to mallo family. Immature okra pods are consumed in most areas &vitamins are also a source of dietary medicine okra are also a source of dietary medicine okra is a rich in flavonoid compounds that have anti oxidants activity hyperlipidaemia effect by decreasing the absorption of cholesterol from diet it is found that okra polysaccharides Lowers body weights glucose level Improves glucose tolerance & decreases serum total cholesterol level [7].

Okra &its effect in lowering glucose level

Okra polysaccharide posses anti complimentary & hypoglycemics

Activity it's reported that anti diabetics anti hyperlipidaemia potential of okra peel is seed administration of peel & seed in diabetes showed significant reduction in blood glucose level & increase in body weight. Thanakosai (2013) has reported the presence of two major flavonoids namedisoquercetin and Qercetin-3-obeta glucopyronosyn-glucose[7,8].These 2compounds selectively inhibited intestinal maltase & sucrose in which isoquercetin were 6-10 time more potent than diglucoside the effect of a esclentus fruits an alkaline aminotransferase (ALT) aspartate aminotransferase (AST) and alone aminotransferase (ALT) activities of ALP,AST&ALT decreases significantly after administration of okra juice percent study reported that extract of okra lowers blood glucose& serum lipids in high-fat-diet-induced. Ethanol extract of okra & it's major flavonoids isoquercetrin& quercetin 3-0-gentiobioside reduced blood glucose &serum insulin levels improved glucose to tolerance. In- vitro study of the effects of viscous soluble dietaryfibres of Abelmoschusesclentus L in lowering intestinal glucose absorption found out that there was substantial reduction of diffusion of glucose from water soluble partition of pods abelmoschusesclentusland Na-carboxyl methyl cellulose (Na CMC) and viscous soluble dietary fibres (USDE) of fruits of abelmoschusesclentus L on intestinal glucose absorption using in vitro model. Diffusion system was observed compared to concentration dependent manner, which implications soluble dietary fibres (VSDF) in lowering post prandial serum[8].

Okra (Abelmoschusesculentus), fresh, raw pods, nutritional value per 100g [8, 9]

Principle	Nutrient value	Percentage of RDA
Energy	1.5%	31Kcal
Carbohydrates	7.03g	5.4%
Protein	2.0g	4%

Total fat	0.1g	0.5%
Cholestrol	0 mg	0%
Dietary fibee	9%	3.2%
Vitamins		
Folates	8.8mg	22%
Niacin	1.0mg	6%
Pantothenic acid	0.245mg	5%
Pyridoxine	0.215mg	16.5%
Riboflavin	0.060mg	4.5%
Thiamin	0.0200mg	17%
Sodium	8mg	0.5%
Potassium	303mg	6%
Calcium	81mg	8%
Copper	0.094mg	10%
Iron	0.80mg	10%
Magnesium	57mg	14%
Manganease	0.990mg	43%
Phosphate	63mg	9%
Selenium	0.7mg	1%
Zinc	0.60mg	5.5%
Vitamin C	21.1mg	36%
Vitamin A	375IU	12.5%
Vitamin E	0.36mg	2.5%
Vitamin K	0.53mg	44%

A case study

A case with all the details is taken from the Dhanushhospital, chintamani, India the patient is male & having age of 45 years

Occupation

Farmer, chintamani

He was diagnosed in hospital on 24-05-2017 was discharged on 28-05-2017

C/O:

- Loss of consciousness.
- Increased urine output
- Irrelevant talking

H/O:

- Hyperglycemia.

Past illnesses

- The patent is known diabetic and he was under medication with the Glycomet- gp 2

O/E

- Patent is conscious& coherent
- PR:80bpm
- BP:150/90mmhg
- CVS:s^1s^2+
- RS: BLAE+
- LNS: NAD
- P/A: Soft

TREATMENT

Okra, lady's finger (abelmoschusesclentus) is put in the water over night & taken in the water morning with empty stomach

PROCEDURE

Okras top & bottom are cut & thrown now the okra is cut in to small pieces about 4-5 pieces of okra is added in to 200ml of water and left as it is for over a night about two hours. Then take the okra out from the water drink the water.

RESULT

Based on laboratory investigations& physical examination in patient has confirmed the presence of diabetes mellitus.

Tab.01: BIOCHEMISTRY TEST

TEST	INTIAL VALUE	AFTER ONE MONTH
1.Fasting blood sugar (60-110 mg/dl)	*130* mg/dl	100 mg/dl
*2.*Post prandial blood sugar (70-140 mg/dl)	*80 mg/dl*	*80 mg/dl*
3. Random blood sugar (60- 170 mg/dl)	*202* mg/dl	160 mg/dl
4. Glycoside Hemoglobin (4.5-6.5 %)	5.8%	6.4%
*5.*Creatinine (0.6-1.1 mg/dl)	0.6 mg/dl	0.6mg/dl

Other investigation

Some minor infarcts are seen in ganglionic region.

Discussion

Identification of potential anti-diabetic molecules & their targets in abelmoschusesclentus a study published in 2014 described various medicinal herbs comprehensively based on the following criteria, active compounds, target proteins, pathways, investigating biological basis of pharmacological actions and chemical basis of pharmacological action. This comprises fifteen medicinal plants which were listed in "Ayurveda" for anti-diabetic effect which also include abelmoschusesculentoteanoli acid beta sistostenol, myricetin, kaempterol are the four main compounds which play role in exhibiting anti-diabetic effect brought by abelmoschusesclentus (tablets). Myricetin is well studied & commonly found in multiple plants and has shown diverse effect such as anti-hyper glycemicanti-hyper lipidemia, protective effect against cardiac diseases, it has also been noted to have anti-diabetic by its antioxidant effect and free radical

scavenging effect. The property is also seen in abelmoschusesclentus extract in-vitro assay kaempferolis another flavonoid found in abelmoschusesclentus it also exhibits anti-diabetic effecy, protective effect against chronic disease like IHD. Hyperlipidaemia. It has also documented to have protective effect against various cancers. Although the protective effect exhibited by kaempferol is mostly found statistically and clinically insignificant [8.] Oleanolicacid occurs in most edible plants and food. It has proven to have anti-diabetic activity along with hepatopatoprotectiveand anti-tumor out comes. But the effect is easily reversible and binding affinity to the site is very weak [9]. Beta sistostenolalthough blocks the protein targets for diabetes but fails to show desired effect in chemical analysis. Beta sistostenolneeds to be explored further as an active compound against diabetic targets

Conclusion

Okra is a natural product and it has anti-diabetic activity so the usage of the soaked l. Okra water is not harmful to human health. An alpha glucosidase and alpha -amylase enzyme effects in aqueous extract'sof Abelmoscusesculentus, to provide an evidence for anti-diabetic activity through potential inhibition of alpha glucosidase and sulpha amylase enzyme using the aqueous extract, peel and seed. Other extraction method like, the powdered peel and seed were used for the preparation of aqueous extract. And found that peel and seed showed appreciable alpha glucosidase [IC50= (124.96± 0.32) mg/dl and (142.47±0.28) mg/dl] and alpha amylase [(IC50= (123.36±0.16) mg/dl and (136.23±0.21) mg/dl].And inhibitory effect in a concentration dependent and soaking in water methods are confirmed and shows hypoglycaemic effect in A. Esculentus (lady's finger).

Acknowledgement

We are thankful and express our deepest gratitude to our Assistant professor Dr.Mekkanti Manasa Rekha, Department of Pharmacy Practice, Gautham college of Pharmacy, RT. Nagar, Bangalore, Karnataka, India for guiding us and helping us in collection of case related diabetes mellitus. Dr.Rinku Mathappan, Principal and Professor Department of Pharmacognosy, Gautham college of pharmacy, RT. Nagar, Bangalore, Karnataka, India and would like to express deepest gratitude towards my colleagues who helped us directly or indirectly for completing the research work. And thankful to our Professional university RGUHS, Bangalore, Karnataka, India.

Abbreviation

C/O: Case of
H/O: History of
O/E: On Examination

Refrences

1. Abdulrahim Aljamal . (2011). Effects of ladies finger water on the Patients with Diabetes Mellitus. Research Journal of Medicinal Plants.October.Volume-5.471-476.
2. Gupta A.(2007).Effect of okra water on glycaemic control and insulin resistance in type 2 diabetes mellitus. Journal of Association Physicians India.Volume-49.1057-61.
3. Hajera (2010).In vitro study of the effects of viscous soluble dietary fibres of Abelmoschus esculentus L (Lady's finger) in lowering intestinal glucose absorption. International Bangladesh Pharmaceutical Journal.July.Volume-13.35-40.
4. Nithiya. et.al. (2015).Blood glucose before and after lady's finger water among type 2 diabetic patients. The Nurse. Septemper.Volume-7.8-12.
5. Hajera (2010).In vitro study of the effects of viscous soluble dietary fibres of Abelmoschus esculentus L (Lady's finger) in lowering intestinal glucose absorption. International Bangladesh Pharmaceutical Journal.July.Volume-13.35-40.
6. Haftu B Gebru.et.al.(2014).Assessment of Diabetes Knowledge and its Associated Factors among Type 2 Diabetic Patients in Mekelle and Ayder Referral Hospitals, Ethiopia**.** Diabetes & Metabolism.May. Volume-5.Issue-5.1-7.
7. Manuj Sharma .et al.(2016).Trends in incidence, prevalence and prescribing in type 2 diabetes mellitus in primary care: a retrospective cohort study. Diabetes and endocrinology. January .Volume-6. 123-128.
8. Naheed Gul. (2010).Knowledge, attitudes and practices of type 2 diabetic patients. J Ayub Med Coll Abbottabad.Volume-23.128-130.
9. Nithya Neelakantan .et al.(2014).Effect of ladies finger juice (Abelmoscus esculentus (L.) Moench) intake on glycemia: a meta- analysis of clinical trials. Nutrition Journal.January.13-17.
10. Sandeep.S.et.al. (2008).Changing Trend in Epidemiology of Diabetes Medicine.June.Volume-18.134-139.