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Study of anti-diabetic activity of *Kedrostis foeditissima* (jacq.) Cogn.

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A B S T R A C T

In the Present scenario diabetes is one of the major health problems around the world and the incidence of this metabolic disorder is being increased. Though science and technology is improving positively, the negative in fact it is also increasing which is evident from the new epidemic breaks. One such metabolic disorder is diabetic which is more prevalent today and the prevention of this complicated disease is one of the medical researches done in pharmacotherapy. Bearing this the investigator has done work on the medicinal plant of *Kedrostis foeditissima*(Jacq.) Cogn. The main objective of this work is to evaluate the in-vitro Anti-diabetic activities of dried (Crude) extract of in methanol, Hexane and petroleum ether. And this was studied for their effect on the inhibition of Alpha Amylase and glycosylation of hemo globin. The results indicate that the extracts of the plant *Kedrostis foeditissima* (Jacq.) Cogn. This work has not been reported so far from any other part, hence the present investigation is the first report.

Introduction

The present study deals with screening of herbal extracts using in vitro techniques for its anti diabetic activity and the objectives is to study *in vitro* evaluations of alpha amylase inhibition and glycosylation of heamoglobin using this plant (Cristina Coman *et al.*, 2012).

The main objective of this work is to evaluate the in vitro anti diabetic activity of *Kedrostis foeditissima* extract were studied

for their effect on inhibition of α – amylase and glycosylation of hemoglobin. The present scenario diabetic is one of the major health problems around the world and the incidence of this metabolic disorder is one of the increases (WHO, 1980). Day by day science and technology is improving and another side increasing the variety of human being diseases, so current therapeutic inventions has not done much in preventing complications of diabetics. It is a metabolic disorder and the management is an

important criterion for pharmacotherapy the medicinal plant play very important role in preventing the progress of the diseases (Sabjan Khaleel Basha *et al.*, 2012). The use of herbal medicines for the treatment of diabetes mellitus has gained importance throughout the world. The WHO also recommended and encouraged this practice especially in countries where access to the conventional treatment of diabetes is not adequate. There is an increased demand to use natural products with anti diabetic activity due to the side effects associated with the use of insulin and oral hypoglycemic agents (Radhika *et al.*, 2013). The available literature shows that there are more than 400 plant species shown hypoglycemic activity. Though this plant has great reputation in the indigenous system of medicine for their Ant diabetic activities, many remained to be scientifically established and the present investigation that have been used in the traditional system of medicine and have shown *in vitro* anti diabetic activity.

Material and Methods

Plant material

Fresh leaf and seed of the species K.F.(Family-Cucurbitaceae) were collected during September 2014 to January 2015 from Northern parts of Chittoor district in Andhra Pradesh, India. Plant was identified using the Presidency College, Chennai-5, Tamil Nadu, India. The Research and PG Department of Plant biology and plant biotechnology in the plant and thoroughly washed with fresh water and kept for shade dry at room temperature to get rid of moisture, until further analysis.

Preparation of extract

The shade dried powdered from leaves and seeds of *Kedrostis foeditissima* was taken

and subjected to successive extraction using methanol, hexane and petroleum ether by continuous percolations process in soxhlet apparatus. Each extract was concentrated by distilling of the solvent and rotary evaporated to dryness. The extracts were used for further study.

In vitro anti-diabetic activity

α - amylase inhibition assay

The assay mixture containing 200 μ l of 0.02M sodium phosphate buffer, 20 μ l of α -amylase (1%) and the plant extract in concentration range 20–100 μ g/ ml were incubated for 10 min at room temperature followed by addition of 200 μ l starch (1%) in all test tubes. The reaction was terminated by adding 400 μ l DNS reagent and placed in boiling water bath for 5 minutes, cooled and diluted with 15 ml of distilled water and absorbance was measured at 540 nm. The control samples were prepared without any plant extract (Kamtchouing *et al.*, 1998). The % inhibition was calculated according to the formula.

$$\text{Inhibition (\%)} = \frac{[\text{Abs control} - \text{Abs sample}]}{\text{Abs control}} \times 100$$

Non – enzymatic glycosylation of hemoglobin assay

Anti diabetic activity of leaf and seed of *Kedrostis foeditissima* were investigated by estimating degree of non enzymatic hemoglobin glycosylation, measured calorimetrically at 520 nm. Glucose (2%) hemoglobin (0.06%) and gentamycin (0.02%) solution were prepared in phosphate buffer 0.01 M, pH 7.4. 1 ml each of above solutions were mixed. 1 ml of each concentration was added to above mixture.

Mixture was incubated in dark at room temperature for 72 hrs. The degree of glycosylation of hemoglobin was measured calorimetrically at 520 nm. Agarbose tablet was used as standard drug for assay % inhibitions was calculated as

$$\text{Inhibition (\%)} = \frac{[\text{Abs sample} - \text{Abs control}]}{\text{X 100 Abs sample}}$$

Result and Discussion

The result of statistical analysis of anti diabetic is shown in table 1 and table 2. There results showed that among the three solvent were tested Hexane extract exhibited significant diabetic activity both in alpha amylase and glycosylation assay.

Among the leaf and seed extraction the leaf extraction showed better result for anti-diabetic activity. As such in alpha amylase assay Hexane extract and in HB-

glycosylation pet. Ether extraction was found to be better in the seed extraction than the leaf extraction.

Conclusion

The main objective of this work is to evaluate the in-vitro Anti-diabetic activities of dried (crude) extract of methanol, hexane and pet. Ether. This study reveals the inhibition of alpha amylase and glycosylation of hemoglobin from the seeds and leaves of *Kedrostis foeditissima* plant. From the results obtained the seed and leaf extracts possess a strong anti efficacy between the leaf and seed. The seed shows more activity than the leaf. Seeds have more active chemical components against anti diabetic activity. Hexane extracts shows more effect than the methanol, comparatively the plant sample has potency of controlling diabetic activity. It may be first reported in this work.

Table.1 Alpha amylase assay

Salvent		Subset
Petroleum Ether	50	25.89
Methanol	50	27.47
Hexane	50	28.03
Sig		0.52

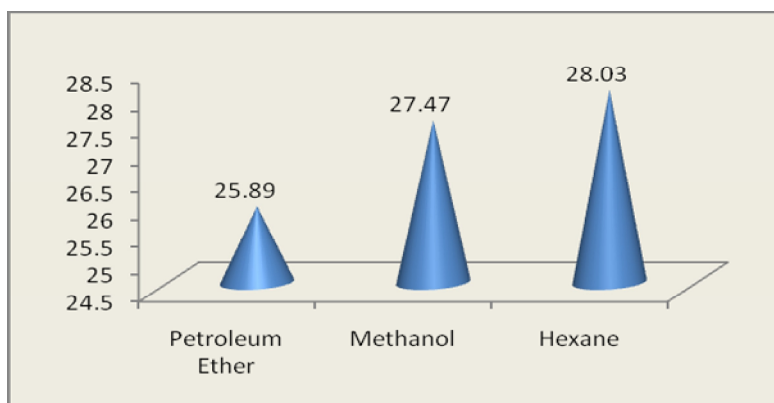


Table.2 Antidiabetic activity of different parts of *Kedrostis feoditissima*

Experiment		Subset		
		Methanol	Ether	Haxene
Leaf	45	21.25		
Seed	45	24.71	29.85	
Standard	45	0.83		42.20
Sig.		0.52	1.000	1.000

Table.3 Hb – glycosylation assay

Salvent			
Methanol	150	33.25	30.40
Petroleum Ether	150	33.81	34.32
Hexane	150		40.46
Sig		0.52	1.00

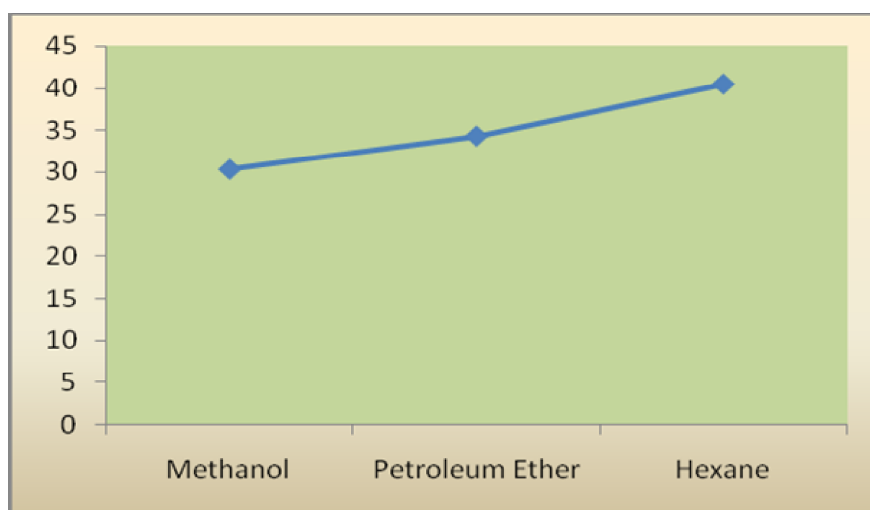


Table.4 Antidiabetic activity for significant time intervals

Hours		Subset		
		Methanol	Ether	Haxene
24	150	27.50		
48	150		34.89	
72	150			45.14
Sig.		1.000	1.000	1.000

Fig.1 Schematic representation of plant extract



References

- Cristina Coman, Olivia Dumitrita Rugina, Carmen Socacio, 2012, Plants and Natural compounds with Antidiabetic action. E.Ap Academic pres. 40(1) 314-325.
- Kamtchouing, P., Sokeng, D.S., Moundipa, P.F. et al. 1998. Protective role of *Anacardium occidentale* extract against streptozotocin induced diabetes in rats. *J. Ethnopharmacol.*, 62: 95–99.
- Naila Abdul Sattar, Fatima Hussian, TahivaIqbal, Munir Ahmad Sheikh, 2012, Determination of InvitroAntidiabetic effects of *Zingiberofficinale* Roscoe. BJPS. vol.48, n,4, Oct/Dec. 601-607.
- Radhika, S. SenthilKumar, R. Sindhu, S. Sagadevan, E. and Arumugam, P. 2013, Phytochemical investigation and Evaluation of Antihyperglycemic Potential of *Premna Corymbosa*, IIPPS.
- Sabjan Khaleel Basha, Vinoji Sugantha Kumari, 2012, Invitro Anthidiabetic Activity of *Psidium guajava* Leaves extracts, Asian Pacific Journal of Tropical Disease. S98-S100.
- WHO Expert committee on diabetes mellitus: second report, World Health Organ. Tech. Rep. Ser., 646, pp.1-80 (1980).