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### INVESTIGATION OF PHYTOCHEMICAL STUDIES AND EVALUATION OF ANTIDIABETIC SYNERGESTIC EFFECT IN THE METHANOLIC EXTRACTS OF *COCCINIA GRANDIS* (L.) J. VOIGT AND *TRIGONELLA FOENUM-GRÆCUM* (L.)

Ruby S<sup>\*1</sup>, Banurekha J<sup>1</sup>, Loganathan J<sup>1</sup>, Jaykar B<sup>1</sup>

<sup>1\*</sup>Department of Pharmaceutical Chemistry, Natural Products Research Laboratory, Vinayaka Mission's College of Pharmacy, Salem, Tamil Nadu, India.

#### ABSTRACT

The methanolic extract of *Coccinia grandis* (L.) J. Voigt and *Trigonella foenum-graecum* (L.) was investigated for synergistic effect on antidiabetic action by Alloxan-induced diabetes in laboratory animals. The blood glucose levels in the animals was decreased after using combined extracts of both *Coccinia grandis* Voigt and as well as *Trigonella foenum-graecum*. The antidiabetic activity produced by the extracts of whole part of the selected plants was satisfactorily evaluated by statistical analysis.

#### KEYWORDS

Anti-diabetic, Synergistic effect, *Coccinia grandis* Voigt and *Trigonella foenum-graecum*.

#### Author of correspondence:

Ruby S,  
Department of Pharmaceutical Chemistry,  
Natural Products Research Laboratory,  
Vinayaka Mission's College of Pharmacy,  
Salem, Tamil Nadu, India.

**Email:** [rubs\\_raj@rediffmail.com](mailto:rubs_raj@rediffmail.com).

#### INTRODUCTION

The plant *Coccinia grandis* Voigt (Plant A) belongs to the family *cucurbitaceae*, used in the treatment of diabetes, pain, hypertension, fever, jaundice and GIT problems. Another plant *Trigonella foenum-graecum* (Plant B) is used as antidiabetic herb, but it shows side effects like reduced potassium levels, increase in bleeding, allergic reaction, dizziness, GIT problems, uterine contractions. So, the present attempt was made to reduce the side effects of the latter plant by combining its extract with former plant. The former plant *Coccinia grandis* Voigt has good antidiabetic activity with good digestive properties. Both the plants show saponins, tannins,

phytosterol, alkaloids, flavanoids, triterpenes, etc. The present study was believed to have better therapeutic action in the treatment of diabetes by using both the extract mixtures, and expecting that side effects of the latter plant will be overcome by using both. The study is focused to find out the antidiabetic activity of the methanolic extracts of *Coccinia grandis* Voigt and *Trigonella foenum-graecum* in comparison with Glibenclamide (0.5 mg/kg).

### MATERIALS AND METHODS

The plant *Coccinia Grandis* (L.) J. Voigt (*Cucurbitaceae*), *Trigonella Foenum-graecum* was collected from Erode, Tamilnadu. The collected plant parts were dried under shadow. The dried material was crushed to coarse powder. Collected coarse powders were extracted with Petroleum ether (65<sup>0</sup> C) and following through the plant macerated with chloroform and methanol for 72 hrs for each in the soxhlet extractor. Finally the methanolic extracts were concentrated under reduced pressure. The preliminary phytochemical investigation of

methanolic extracts shows the presence of flavonoids, tri-terpenoids, tannins and sterols was tabulated in Table No.1.

Wister albino rats of either sex weighing between 150-200 gm were used for the study. They were provided with standard diet and water *ad libitum*. The rats were divided into six groups, each consists of six animals. Diabetes induced by Alloxan monohydrate (10 mg/ml) was administered to the rats through i.p. route. The first group received normal saline (control), the second group received alloxan induced rats (diabetic control), the third group received glibenclamide as standard (0.5 mg/kg/oral), the fourth and fifth groups received methanolic extracts of *C. grandis* (250 mg/kg/oral), *T. foenum-graecum* (500 mg/kg/oral) respectively. The sixth group received methanolic extracts of both *C. grandis* (125 m/kg/oral) and *T. foenum-graecum* (250 mg/kg/oral). The blood glucose level was checked at 7<sup>th</sup>, 14<sup>th</sup> and 21<sup>st</sup> day through the tail vein puncture method by digital glucometer. The decrease in the blood glucose level against control group calculated and tabulated in Table No.2.

### RESULTS

Table No.1: Phytochemical analysis of methanolic extracts of *Coccinia Grandis* (L.), *Trigonella Foenum-graecum*

S.No	Constituents	<i>Coccinia Grandis</i>	<i>Trigonella Foenum-graecum</i>
1	Carbohydrates	Absence	Absence
2	Alkaloids	Presence	Absence
3	Glycosides	Presence	Presence
4	Proteins	Absence	Presence
5	Tannins	Presence	Presence
6	Saponins	Absence	Absence
7	Sterols	Presence	Presence
8	Flavanoids	Presence	Presence
9	Terpenoids	Presence	Presence

**Table No.2: Antidiabetic activity of Methanolic extract of *Coccinia Grandis* (L.) J. Voigt. and *Trigonella Foenum-graecum* (L.) with its combination on blood glucose level**

S.No	Group	1 <sup>st</sup> day	7 <sup>th</sup> day	14 <sup>th</sup> day	21 <sup>st</sup> day
1	Group I (Control)	103.83±3.357	104±2.989	105.33±2.108	104.33± 2.060
2	Group II (Diabetic control)	286.16 ± 2.172	291.83±2.903	281.166±2.868	274.166±2.725
3	Group III (Standard)	290.5 ± 3.403	274 <sup>**</sup> ± 4.050	167.16 <sup>**</sup> ±4.607	125.00 <sup>**</sup> ±3.958
4	Group IV (Plant A)	291.66 ± 2.642	277.16 <sup>*</sup> ±3.027	232 <sup>**</sup> ± 5.209	133.5 <sup>**</sup> ± 1.176
5	Group V (Plant B)	293.16 ± 4.339	277 <sup>*</sup> ± 4.107	259.66 <sup>**</sup> ±4.248	140.00 <sup>**</sup> ±1.983
6	Group VI (A and B)	291.66 ± 3.361	273.5 <sup>**</sup> ±2.705	204 <sup>**</sup> ± 6.351	128.66 <sup>**</sup> ±1.229

All values are expressed as mean ± SEM (n=6); Std= Glibenclamide

### CONCLUSION

The extract obtained from plants *Coccinia Grandis* (L.) J. Voigt (Cucurbitaceae) and *Trigonella Foenum-graecum* L. were subjected to various phytochemical tests, to identify the active constituents, which showed presence of Flavonoids in methanolic extract. The methanol extract possessed Antidiabetic activity at considerable extent. It shows that Flavonoids present in these extracts may be responsible for Antidiabetic activity. The both plant extracts were tested individually and in combination to test the synergistic activity and obtained results was significant. As per the overall study conducted we can conclude that the use of the both plant (*Coccinia Grandis* and *Trigonella Foenum-graecum* L) in combination is much more beneficial for diabetes curing. In future it may be a good Antidiabetic treatment which can cure diabetes completely. So, it is necessary to have a detailed study on the same.

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