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# Phytochemical and *in vitro* Antioxidant Activity of *Trichosanthes cucurmena* L.

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**Abstract:** Diversity of plants has attracted a vast contract of research interest in search of natural antioxidant activity. Many Plant materials having anti-oxidant properties are used in medicinal and preservative purposes. In current revise leaves of *Trichosanthes cucurmena* L. (Family: Cucurbitaceae) was extracted with two different solvents like petroleum ether (PETC) and ethanol extract (EETC) shows positive results for the presence of phytochemicals like Phenols, tannin, flavonoids, alkaloids, saponin, anthraquinone, triterpenoids and steroids etc. Ethanol extract (EETC) was subjected for antioxidant activity. In ethanol extract Antioxidants like phenolic compound and flavonoid content was found to be high. Hence EETC was selected for antioxidant activity and find out significant activity by scavenging DPPH free radical. This plant has the viewpoint of being a source of new clinically efficient antioxidant compounds.

**Key words:** *Trichosanthes cucurmena* L. · Antioxidant · Phytochemical and DPPH

## INTRODUCTION

The various living systems bear a rich biodiversity in nature. Since the ancient era before scientific knowledge would change plants performed myriad functions of the biosphere.

Among which utilize of plants in curing illness is well documented. But after the advance technology and improved scientific knowledge changed plants as a source of therapeutic agents as they are able to offer, the purpose with lesser side effects that are frequently associated with synthetic antimicrobials [1]. It was estimated that the current global market for plant-derived drugs is worth more than 20 billion and the market keep on growing [2] Perusal of literatures reports the medicinal properties of most of the plants posture biological activity one of such species is *T. cucumerina*. (F. Cucurbitaceae) which has been exploited for many traditional medicinal use [3].

The plant extract also showed gastro protective activity [4]. The inhibiting effects on forming protein non-enzymatic glycation an end product was studied from the ethanolic leaf extract [5].

The diversity of pathogenic bacteria is general and so is the variety of diseases caused by them. Despite the survival of many potent antimicrobial agents [6], multi-resistant pathogenic strains are continuously emerging, magnificent the need for a continuous search and development of new drugs [7, 8].

Most drugs hold many severe side effects. Many medicines of natural foundation had been used since long time without any severe adverse effects, however, a number of synthetic antioxidants and drugs are commercially available, natural products still substitute most of the chemical agents. In the present study, solvent extracts like PETC and EETC were evaluated for the qualitative phyto-chemical analysis, *in vitro* and antioxidant activity which may lead to the finding of most effective agent for the management of diseases and effective potential source of natural antioxidant that may help in preventing various oxidative stresses.

## MATERIAL AND METHODS

**Drugs and Chemicals:** All reagents procured were analytical grade.

**Plant Collection:** Fresh leaves of *T. cucumerina* L., Was collected from field of Komarapalayam and authenticated by Dr.P. Satyanarayana, Scientist D & Head office in charge, Southern Regional Centre, TNAU campus, Coimbatore. Voucher specimen (No: JKKNCP/0102/12)

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has been deposited in the Department of Pharmacognosy, JKK Nataraja College of Pharmacy, Komarapalayam, Tamilnadu, India.

**Preparation of Plant Extracts:** The dried leaves of *T. cucumerina* were extracted with Petroleum ether and then Ethanol was subjected to solvent extraction.

**Ethanol Extract of Cucumerina Linn. (EETC):** Fine powdered Leaves of *T. cucumerina* were extracted with ethanol (60-80°C) using soxhlet apparatus. The extract was filtered and evaporated to separate solvent and residue. The semisolid residue which obtained was stored in desiccator until further use [9].

**Preliminary Phytochemical Screening:** The freshly prepared crude solvent PETC and EETC was qualitatively tested for the presence of phytochemical constituents such as alkaloids, flavones, terpenoids, phenols, tannins etc., by standard methods [10, 11].

**DPPH Radical Scavenging Activity:** For antioxidant activity only EETC was selected. The antioxidant activity of test solvent *Trichosanthes cucumerina* L. The extract was determined in terms of radical scavenging ability by DPPH method. Stock solution of 0.1 mM DPPH in ethanol was diluted using ethanol. 1.0 ml of solvent extract solution of differing concentrations (10–100 mg/ml) was added to 1.0 ml of DPPH and made volume up to 3 ml. The standard for drug Vit. C was also used in this test. The absorbance was measured at 517 nm after 30 min. Inhibition was calculated by using the following equation:

% inhibition = [Control-Sample] /Control X 100.

$IC_{50}$ values were calculated as the concentration of each sample required to give 50% DPPH radical scavenging activity with respect to absorbance of blank from the graph. The results were compared with Vit. C. The experiment was performed in triplicates and values are expressed in Mean ± SD [12-16].

## RESULTS AND DISCUSSION

In the present study, preliminary chemical analysis of PETC and PETC revealed the presence of carbohydrates, proteins and Sterols Phenols, flavonoids, alkaloids, Saponin, anthraquinone and Tannins are present in ethanol. But Alkaloids, saponin, steroids, flavonoids are absent in the petroleum ether extract (Table 1).

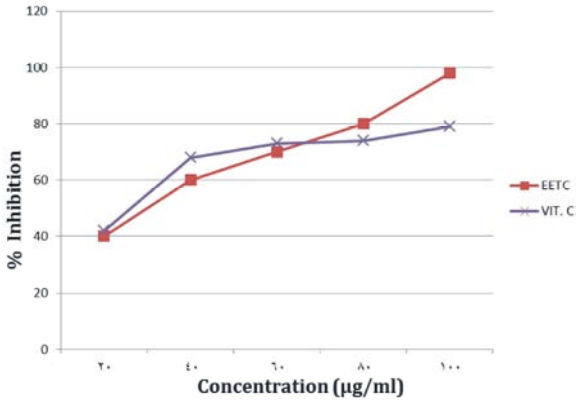


Fig. 1: Antioxidant activity of EETC and Vit. C on DPPH Radical

Table 1: Qualitative chemical analysis of PETC and EETC Leaf.

| S. No | Test | Petroleum ether Extract | Ethanol Extract |
|---|---|---|---|
| 1. | Carbohydrates test | | |
| | a) Molisch's test | + | + |
| | b) Fehling's test | + | + |
| 2. | Proteins & Aminoacids | | |
| | a) Ninhydrin test | + | - |
| | b) Biuret test | + | - |
| | c) Sodium bicarbonate test | + | - |
| | d) Tannic acid test | + | - |
| | e) Xanthoprotein test. | - | - |
| 3. | Alkaloids | | |
| | a) Wagner's test | - | + |
| | b) Dragendorff's test | - | + |
| | c) Mayer's test | - | + |
| 4. | Saponins | | |
| | a) Foam test | - | - |
| 5. | Flavonoids | | |
| | a) Ferric chloride test | - | + |
| | b) Shinoda test | - | + |
| | c) Alkali & acid test | - | + |
| 6. | Tannins & phenolic compounds | | |
| | a) Ferric chloride test | - | + |
| | b) Heavy metals test | | |
| | i) Copper sulphate test | - | - |
| | ii) Potassium ferricyanide test | - | - |
| | iii) Nitric acid test | + | + |
| 7. | Glycosides | | |
| | a) Modified Borntrager's test | - | + |
| 8. | Phytosterols | | |
| | a) Libermann- Burchard's test | - | + |
| | b) Terpenoids | + | + |
| | i) 2, 4-DNPH test | - | + |
| | c) Anthraquinones | | |
| | i) Borntrager's test | - | + |
| | d) Steroids | | |
| | I) Salkowski's test | + | + |

The Ethanol extract exhibited significant free radical scavenging activity wherein, as the concentration increases the percentage inhibition of free radical also increases. Ethanol extract showed DPPH significant activity with $IC_{50}$ value of 31.4 µg /ml. Standard Vit.C showed significant DPPH scavenging activity with $IC_{50}$ value of 21.06 µg /ml [1].

The present study, ethanol extract of *T. cucumerina* revealed the presence of carbohydrates, alkaloids, flavonoids, phytosterols, tannins and phenolic compounds which justify the earlier findings of Kage *et al*. [17]. In the present investigation Crude extract of EETC upon evaluation of antioxidant activity using the DPPH method showed $IC_{50}$ value ranging from 10–100 µg/ml with different test solvent extracts. The earliest report of antioxidant compound has been well described by the potent DPPH activity resulting $IC_{50}$ value 31.4 µg /ml by the graph.

## CONCLUSIONS

The present investigation concludes that EETC exhibited significant antioxidant activity, thus results obtained in the present investigation are promising enough for further isolation and characterization to reveal any novel metabolite of pharmaceutical importance.

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