ABSTRACT
The present study was undertaken to find the antioxidant value of *Phyllanthus acidus* in leaf and fruit methanolic extract. Antioxidants have been reported to prevent oxidative damage caused by free radical and can be used in cardiovascular and anti-inflammatory diseases. Antioxidant activity was evaluated by using 1,1-diphenyl-2-picrylhydrazil (DPPH) free radical assay, reducing power assessment. The extract showed moderate to good antioxidant activity. In DPPH radical scavenging assay the percentage of inhibition was found to be 13.85% in Leaf methanol and 12.20 in Fruit methanol. The ascorbic acid (Standard) is 12.03 when compared to the standard the leaf and fruit methanolic extract shows better activity. The results of the present study indicate that the extract possesses good antioxidant potential.

KEYWORDS: *Phyllanthus acidus*, Antioxidant, DPPH.

INTRODUCTION
Medicinal plants, since times immemorial, have been used in virtually all cultures as a source of medicine. The widespread use of herbal remedies and healthcare preparations, as those described in ancient texts such as the Vedas and the Bible and obtained from commonly used traditional herbs and medicinal plants, has been traced to the occurrence of natural products with medicinal properties (Hoareau and DaSilva, 1999). The use of traditional medicine and medicinal plants in most countries, as a normative basis for the maintenance of good health, has also been widely observed (UNESCO, 1996). Furthermore, an increasing reliance on the use of medicinal plants in industrialized societies has been traced to the extraction and development of several drugs and chemotherapeutics from these plants as well as from
traditionally used rural herbal remedies (UNESCO, 1998). The World Health Organization has estimated that 80% of the world’s population use botanical medicine for their primary health care needs (Akerele, 1993). In many developing countries, traditional medicine is one of the primary health care systems (Fransworth, 1993).

Reactive oxygen species (ROS) are an entire class of highly reactive molecules derived from the metabolism of oxygen. ROS, including superoxide radicals, hydroxyl radicals and hydrogen peroxide, are often generated as byproducts of biological reactions or from exogenous factors. In vivo, some of these ROS play positive roles in cell physiology; however, they may also cause great damage to cell membranes and DNA, inducing oxidation that causes membrane lipid peroxidation, decreased membrane fluidity and DNA mutations leading to cancer, degenerative and other diseases (Cerutti, 1991; Harman, 1994; Ames, 1998; Finkel and Holbrook, 2000).

*P. acidus*, locally named as gooseberry or star gooseberry in India, is an edible small yellow berries fruit in the Phyllanthaceae family. Fruits are borne in loose clusters, are pale yellow or white, waxy, crisp and juicy, and very sour, found in Bangladesh, South India and Southeast Asian countries. The medicinal activities of *Phyllanthus* species are antipyretic, analgesic, anti-inflammatory, anti-hepatotoxic and antiviral (Unander et al., 1995; Chang et al., 2003; Zhang et al., 2004; Sousa et al., 2007). Fruits of the two well-known species, *P. acidus* and *P. emblica*, contains high contents of vitamin C and have been used for improving eyesight and memory and preventive action against Diabetes and relief of coughing (Unander et al., 1990). Another species of the family, *P. amarus* is an important herbal medicine due to its effective antiviral activities especially toward the hepatitis B virus (Unander et al., 1991; Ott et al., 1997; Rai et al., 2005).

The phytotherapeutic can provides many modern drug development can provides many invaluable drugs from traditional medicinal plants. Search for pure phytochemicals as drug is time consuming and expensive. Numerous plants and polyherbal formulations are used for the treatment of liver diseases. *Phyllanthus maderaspatensis* is sufficiently active against at least, certain hepatotoxics (Hari kumar et al., 2011). World plant biodiversity is the largest source of herbal medicine and still about 60-80% world population rely on plant based medicines which are health care system. India is endorsed with a rich wealth of medicinal plants, which ranked our country in the list of top producers of herbal medicine. Based on this
background the present study was intended to screen the plant \textit{Phyllanthus acidus} (leaf and fruit) phytochemical analysis and antimicrobial activity.

**MATERIALS AND METHODS**

**Collection plant material**

Leaves and fruits of the \textit{Phyllanthus acidus} were collected in Salem. The plant parts were washed separately and air dried and powered. The collected leaves and fruits identified and confirmed by ABS botanical garden, Salem. The powder was extracted with different solvents (Methanol, Ethyl acetate and Diethyl ether).

**Antioxidant activity**

**DPPH RADICAL SCAVENGING ACTIVITY**

DPPH radical scavenging activity was carried out by the method of Molyneux (2004). To 1.0 ml of 100.0 μM DPPH solution in methanol, equal volume of the test sample in methanol of different concentration was added and incubated in dark for 30 minutes. The change in coloration was observed in terms of absorbance using a spectrophotometer at 514 nm. 1.0 ml of methanol instead of test sample was added to the control tube. The different concentration of ascorbic acid was used as reference compound. Percentage of inhibition was calculated from the equation $[(\text{Absorbance of control} - \text{Absorbance of test})/ \text{Absorbance of control}] \times 100$. IC$_{50}$ value was calculated using Graph pad prism 5.0.

**NITRIC OXIDE RADICAL SCAVENGING**

Nitric oxide radical scavenging activity was measured spectrophotometrically (Govindharajan \textit{et al.}, 2003). 1.0 ml of Sodium nitroprusside (5 mmol) in phosphate buffer (pH 7.4, 0.1 M) was mixed with different concentrations of the extract (100 – 500 microgram/ml in phosphate buffer (pH 7.4, 0.1 M). The tubes were then incubated at 25°C for two hours. At the end of second hour 1.5 ml of reaction mixture was removed and diluted with 1.5 ml of Greiss reagent (1% sulphanilamide, 2% o-phosphoric acid, 0.1% of naphthyl ethylenediamins dihydrochloride) The absorbance of the chromophore formed during diazotization of the nitrite with sulphanilamide and subsequent coupling with naphtylethylene diamine dihydrochloride was measured at 546 nm. Control tube contain all chemicals except plant extract.
RESULT AND DISCUSSION

Antioxidant activity

Reactive oxygen species (ROS), from both endogenous and exogenous sources, may be involved in the etiologies of such diverse human diseases as arteriosclerosis, ischemic injury, cancer, and neurodegenerative diseases, as well as in processes like inflammation and ageing (Halliwell and Gutteridge, 1998; Good et al., 1996; Gassen and Youdim, 1997).

Table: Antioxidant activity of Phyllanthus acidus

<table>
<thead>
<tr>
<th>Samples (Phyllanthus acidus)</th>
<th>Percentage of inhibition (%)</th>
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<tbody>
<tr>
<td></td>
<td>DPPH</td>
</tr>
<tr>
<td>Leaf methanol</td>
<td>13.85</td>
</tr>
<tr>
<td>Fruit methanol</td>
<td>12.20</td>
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<tr>
<td>Ascorbic acid</td>
<td>12.03</td>
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</tbody>
</table>

There is evidence that indigenous antioxidants may be useful in preventing the deleterious consequences of oxidative stress and there is increasing interest in the protective biochemical functions of natural antioxidants contained in spices, herbs, and medicinal plants (Osawa et al., 1994; Nada et al., 1997). Our attention has been focused, in particular, on the parts of 12 commonly used Indian medicinal plants.

REFERENCES

