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IN VITRO ANTIOXIDANT ACTIVITIES OF CHLOROFORM EXTRACT OF *MUNTINGIA CALABURA*.

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Abstract:

In recent times, focus on medicinal plants research has increased all over the world and a large body of evidence has collected to show immense potential of medicinal plants used in various traditional systems. For many years herbal medicines have been used and are still used in developing countries as the primary source of medical treatment. Plants have been used in medicine for their natural antiseptic properties. Therefore, research has developed into investigating the potential properties and uses of terrestrial plant extracts for the preparation of potential drugs for treating human cancers. Many plant species are alreadybeing used to treat or prevent development of cancer. Multiple researchers have identified species of plants that have demonstrated anticancer properties with a lot of focus on those that have been used in herbal medicine in developing countries. Hence, the present study envisage that the antioxidant activity of the chloroform extract of Muntingia calabura. The results of the present study indicate that the herbal plant M.calabura contains significant antioxidant activity.

Key words: *Muntingia calabura, Plant based medicines, Potential drugs, Chemotherapy, Side effects.*

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INTRODUCTLION:

Cancer has been a constant battle globally with a lot of development in cures and preventative therapies. The disease is characterised by cells in the human body continually multiplying with the inability to be controlled or stopped consequently, forming tumours of malignant cells with the potential to be metastatic. Current treatments include chemotherapy, radiotherapy and chemically derived drugs. Treatments such as chemotherapy can put patients under a lot of strain and further damage their health. Therefore, there is a focus on using alternative treatments and therapies against cancer [1]. Chemically-derived drugs have been developed and other cancer treatments pre-exist. However, current methods such as chemotherapy have their limitations due to their toxic effects on non-targeted tissues furthering human health problems. Therefore, there is a demand for alternative treatments with naturally-derived anticancer agents with plants being the desired source [2]. *Muntingia calabura* L.belongsto the family of Elaeocarpaceae and is a small, evergreen tree growing in tropical regions of asia. The plant has been reported to possess antiproliferative, antioxidant, antinociceptive, cardioprotective and antipyretic effects. A total of 42 volatile compounds has been identified in the vacuum distillation extract of ripe fruits. Various parts of this plant contains flavonones, flavones, flavans and biflavans which exhibited cytotoxic effects [3]. The determination of biologically and pharmacologically active compounds from plants and their pharmaceutical potential for human use is necessary to challenge the life threatening diseases like human malignancies. Therefore, it is of interest to investigate the antioxidant activity of chloroform extract of *Muntingia calabura* was undertaken.

MATERIALS AND METHODS:

Collection of medicinal plants

The Indian medicinal plant *M.calabura* were collected from the medicinal garden, Chennai, India. The parts of the plants were authenticated by the botanist.

Plant Materials

The aerial parts of Chloroform extract of *M.calabura* were used for this study.

Preparation of Plant extracts

The extraction of the plant material was carried out using known standard procedures. The plant materials were dried in shade and powdered in a mechanical grinder. The powder (25.0 g) of the plant materials were initially defatted with petroleum ether (60-80°C), followed by 900 ml of hydroalcohol by using a Soxhlet extractor for 72 hours at a temperature not exceeding the boiling point of the solvent. The extracts were filtered using Whatman filter paper (No.1) while hot, concentrated in vacuum under reduced pressure using rotary flask evaporator, and dried in a desiccator. The hydro alcoholic extract yields a dark greenish solid residue weighing 5.750 g (23.0% w/w). More yields of extracts were collected by this method of extractions. The extracts were then kept in sterile bottles, under refrigerated conditions, until further use. The dry weight of the plant extracts was obtained by the solvent evaporation and used to determine concentration in mg/ml. The extract was preserved at 2- to 4°C.

Chemicals and Reagents

All chemicals were used for this project were purchased from M/s. Sigma Chemicals, USA.

Determination of Antioxidant activity (DPPH free radical scavenging activity)

The antioxidant activity of the plant extracts was examined on the basis of the scavenging effect on the stable DPPH free radical activity [4]. Ethanolic solution of DPPH (0.05 mM) (300 l) was added to 40: l of extract solution with different concentrations (0.02 - 2 mg/ml). DPPH solution was freshly prepared and kept in the dark at 4°C. Ethanol 96% (2.7 ml) was added and the mixture was shaken vigorously. The mixture was left to stand for 5 min and absorbance was measured spectrophotometrically at 517 nm. Ethanol was used to set the absorbance zero. A blank sample containing the same amount of ethanol and DPPH was also prepared. All determinations were performed in triplicate. The radical scavenging activities of the tested samples, expressed as percentage of inhibition were calculated according to the following equation. Percent (%) inhibition of DPPH activity = [(AB – AA) / AB] x 100 Where AA and AB are the absorbance values of the test and of the blank sample, respectively [4].

RESULTS AND DISCUSSION

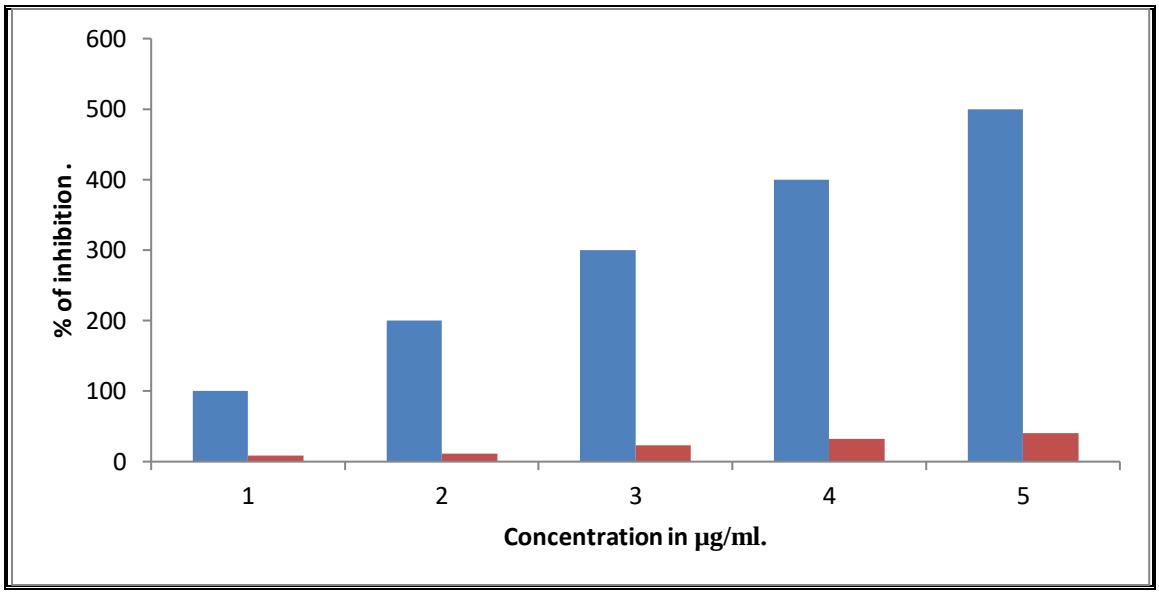

Fig. 1: shows the radical scavenging activity of BHT

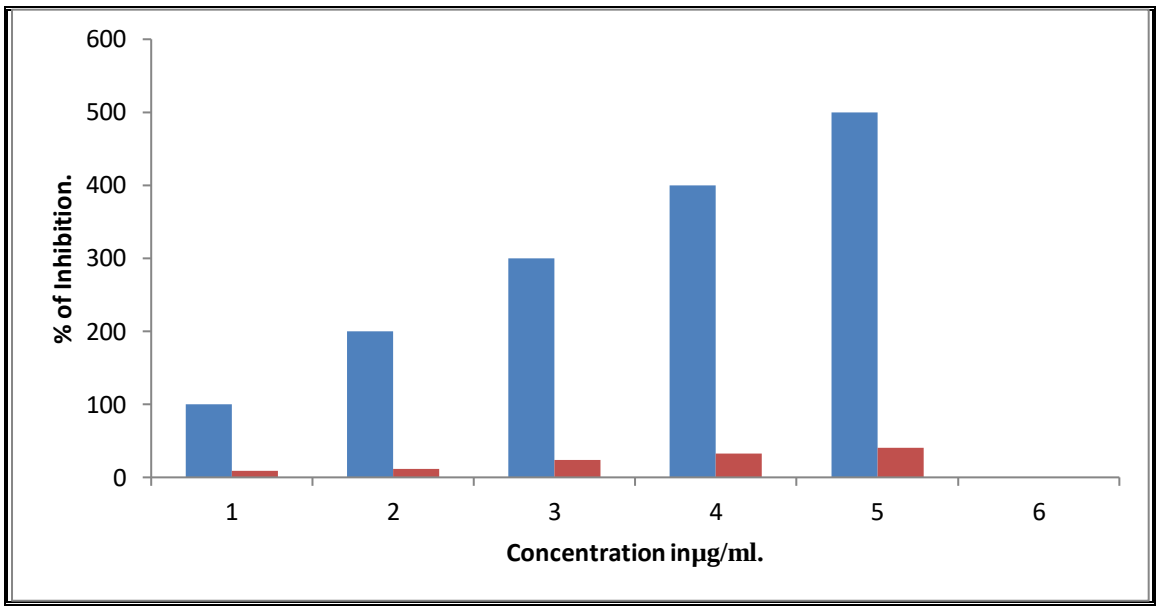

Fig. 2: shows the free radical scavenging activity of chloroform extract of *Muntingia calabura.*

Muntingia calabura L., belongs to *Muntingeaceae* family, is a fast-growing plant all over India. The leaves are rich in flavanoidal compounds like flavones, flavanones, flavans and biflavans as the major constituents, possessing anti diabetic and cytotoxic activities. It has found to contain alkaloids, proteins, flavonoids, anthraquinone glycosides. Other parts like roots, flowers used as antidyspeptic, antispasmodic, diaphoretic to treat headaches, dyspepsia and spasm [5]. The chloroform extract of herbal medicinal plant *M.calabura* were exhibited an antioxidant activity in a dose depended manner. When the concentration increases the inhibition of radical scavenging activity of plant extract is also increased (100,200,300,400 and 500 µg/ml shows the percentage of inhibition in control and plant extract was 38.9,54.2,71.1,74.5,99.8 and 1.6,6.7,22.0,32.2 and 40.6 respectively). Our present study clearly indicate that the free radical scavenging activity of chloroform extract of *M.calabura* due the presence of various Phytochemical components such as

flavanoids, alkaloids, tannins , reducing sugars, cardiac glycosides and anthraquinones.

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