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Phytochemical & Antioxidant Activity of Plant Extract of Catharanthus *Roseus*

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ABSTRACT:

Catharanthus rouses commonly known as Madagascar periwinkle, these plants are highly valuable to humanity and the tremendous benefits. The flowers may vary in colour from pink to purple and leaves are arranged in opposite pairs. The active substances of leaf extracts are anti-carcinogen, antioxidative, hypoglycaemic, antiallergic and antibiotic in nature. The plant produces about 130 of these compounds, including vinblastine and vincristine,two drugs used to treat cancer.This study is based on the antioxidant activity and phytochemical screening on the leaves of Catharanthus roseus using methanol extract. The phytochemical screening reveals presence of alkaloids, flavonids, phytosterol , sapponins and tannins DPPH activity done with required concentration. After incubation at room temperature, absorbance was measured at 517 nm. The concentration on 10µl 20 µl, 30µl, 40µl and 50µl correspondently shows 24.26%, 39.74%, 59.47%,62.10%,81.1% of incubation respectively.

KEY WORDS: Antioxidant, Phytochemicals, *Catharanthus roseus*, DPPH, Ascorbic acid

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INTRODUCTION:

Herbal plants used in traditional medicine consist of wide range of bioactive compounds that can be used as alternative therapeutic tools for the prevention or treatment of many contagious diseases. Natural antioxidants are the source of finding the potentially safe, cheap and effective antioxidants from these are collectively called as free radical scavengers. This type of plant antioxidants mainly applied to prevent lipid per oxidation in the industries. *Catharanths roseus* contains significant amount of volative and phenolic compounds including caffeoy lquinic acids and flavonal glycosides which are known to antioxidant activity. It has a important role in the body defense system that it acts a antioxidants againt reactive oxgen species which are harmful by forming such products through normal cell aerobic respiration (Salah et al).

Accumulation of free radicals can cause pathological conditions such as ischemia, asthma, inflammation, neurodengentration, Parkinson's diseases, mongolism, aging process and perhaps dementia (Sarabjot et al). The plant can grow easily and is commonly available in the sub-continent. *Cantharanthus roseus* has a variety of medicinal properties, such as antibacterial antifungal and antiviral (Carew et al). A variety of different alkaloids is present in Cantharanthus roseus more than 130 different compounds have been reported including about 100 monoterpenoid in dole alkaloids(Pereira et al). As an important medicinal plant, it has a good antioxidant potential throughout its parts under drought stress. Antioxidants are radical scavengers which give protection to human body against free radicals by inhibiting the oxidizing chain reactions. When these substances are present at low concentration in body they markedly delay or prevent the oxidation of an oxidizable substrate (Velioglu et al). These antioxidants always play important roles in delaying the development of chronic diseases, cancer, atherosclerosis, inflammatory bowel syndrome and Alzheimer's diseases.(Chun et.al)

Figure1*: Catharanthus roseus* plant and plant powder

MATERIALS AND METHODS:

Collection of plant:

Collection of *catharanthus roseus* Leaves. The fresh leaves of Catharanthus roseus were collected from around in Coimbatore city.

Solvent extraction:

Freshly collected leaves of *Catharanthus roseus* were dried in a shade and powdered by using a grinding machine. The powered leaves 10g was extracted with 100ml of methanol using a soxhlet extraction.

Phytochemical activity:

Test for alkaloids:

To 2ml of plant extract added 1ml of Wagner's reagent. Formation of yellow color precipitate indicates the presence of alkaloids.

Test for protein:

To 2ml of plant extract added 2ml of nihydrin reagent. No color was absorbed and indicates the absence of protein.

Test for phytosterol:

To 2ml of plant extract and 2-3drops chloroform added acetic anhydride and conc.sulphuric acid formation of reddish brown color indicates presence of phytosterol.

Test for flavonoids:

To 0.5ml of plant extract, 10ml distilled water was added 3-5ml diluted ammonia and 1ml of conc. sulphuric acid. Formation of yellow color indicates the presence of flavonoids.

Test for phenols:

To 2ml of plant extract added treated with few drops of ferric chloride solution. No color Indicates absence for phenol.

Test for tannins:

To 2ml of plant extract and two drops 5% ferric chloride. Formation of dark green color indicates the presence of tannins.

Test for amino acid:

To 2ml of plant extract and two drops ninhydrin reagent added water were for 1-2 minutes. No color indicates absence of amino acid.

Test for saponins:

To 2ml of plant extract added 5ml of distilled water, shaken well and formation of 1 cm layer of foam indicates presence of saponins.

Anti-oxidant activity:

DPPH radical scavenging activity:

This method is based on the scavenging of DPPH through the addition of a radical species or an antioxidant that decolorizes the DPPH solution. 10µl, 20µl, 30µl, 40µl, 50µl of methanol leaf

extract are mixed with 990µl.980µl, 970µl, 960µl and 950µl of 0.1Mm DPPH respectively. 1ml of methanol extract with 1ml of DPPH was taken as control. To all the tubes added 0.4ml of 50Mm Tris-HCL. Incubate the reaction mixture at room temperature for 30 minutes. The absorbance of the reaction mixture was read at 517nm. The percentage of free radical scavenging was calculated as formula mentioned below.

Table 1: Antioxidant activity of *Catharanthus roseus* plant extract

S.NO	Concentration	Plant extract	Standard(Ascorbic acid)	**Sample-IC-50= 26** µg. Standard= 24.5 µg
1.	10µl	24.26 %	15%	
2.	20µl	39.74%	38%	
3.	30µl	59.47%	56%	
4.	40µl	62.10%	73%	
5.	50µl	81.1%	81%	

RESULT:

Phytochemical test:

The phytochemical analysis of *Catharanthus roseus* plant extract showed that alkaloids, phytosterol, flavonoids, phenol, tannins, saponins were present.

Test	***Presence\ Absence***
Alkaloids	+++
Protein	---
Phytosterol	++
Flavonoids	++
Phenols	---
Tannins	++
Saponins	+++

Table2: Result of photochemical analysis of *Catharanthus roseus* leaves

Antioxidant activity:

The concentration on 10µl 20 µl, 30µl, 40µl and 50µl correspondently shows 24.26%, 39.74%, 59.47%, 62.10%, and 81.1% of incubation respectively.

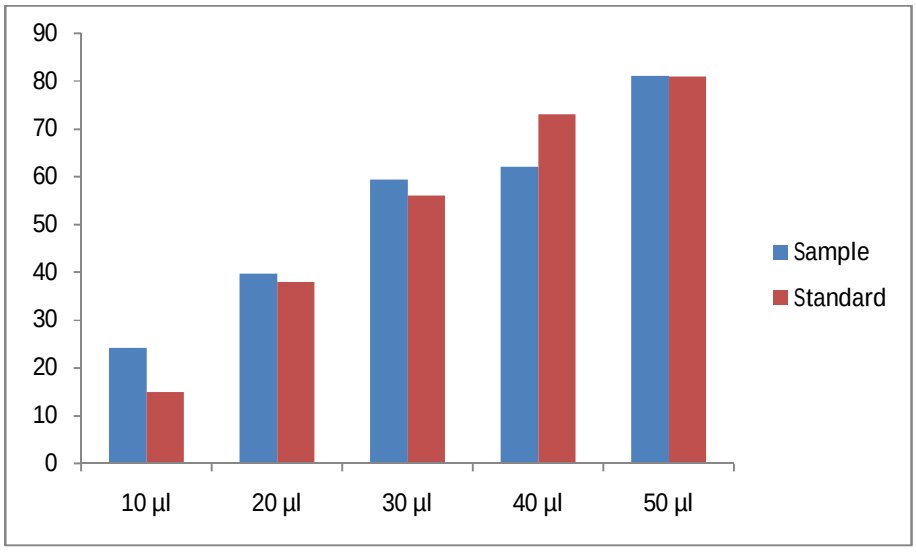

Figure2: Anti- oxidant activity analysis of sample and standard

RESULTS AND DISCUSSION:

From the experiment using methanol extract of catharanthus roseus, the phytochemical analysis of Catharanthus roseus plant extract showed that alkaloids, phytosterol, flavonoids, amino acid, tannins, saponins were present. The concentration on 10µl 20 µl, 30µl, 40µl and 50µl correspondently shows 24.26%, 39.74%, 59.47%, 62.10%, and 81.1% of incubation respectively.

The experiment work done by (S.Patharjan et a.,)showed that study revealed that the presence of active compounds like alkaloids, flavonoids, carbohydrates, tannins, phytosterol, phenols, saponins.Methanolic fraction of Catharanthus roseus leaf extracts was further studied for antioxidant properties. Results obtained in this study confirmed that the antioxidant activity was assessed by DPPH scavenging method where methanolic extract was found to be most potent antioxidant. Moreover, the higher alkaloid content was observed in the methanolic extract of Catharanthus roseus.

CONCLUSION:

Catharanthus roseus were dried in a shade and powdered. The powered leaves of 10g were extracted with 100ml of methanol using a soxhlet extraction. The phytochemical analysis shows the presence of alkaloids, phytosterol, flavonoids, phenol, tannins, and saponins. These antioxidants always play important roles in delaying the development of chronic diseases, cancer, atherosclerosis, inflammatory bowel syndrome and Alzheimer's diseases For antioxidant activity 10µl, 20µl, 30µl, 40µl, 50µl of methanol leaf extract are mixed with 990µl.980µl, 970µl, 960µl and 950µl of 0.1Mm DPPH respectively. On incubating at room temperature for 30 minutes the absorbance was measured at 517 nm. The concentration on 10µl 20 µl, 30µl, 40µl and 50µl correspondently shows 24.26% 39.74%, 59.47%, 62.10%, and 81.1% of incubation respectively.

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