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ANALYSIS ON SECONDARY METABOLITES, ANTIOXIDANT ACTIVITY, NUTRIENTSOF PLANTS LOCATED AT SELECTED SITESIN SALEM,DHARMAPURI, NAMAKKAL DISTRICT

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ABSTRACT

Plants still make an important contribution to health care. Large number of medicinal plants has been investigated for their antioxidant properties in the form of raw extracts or from their chemical constituents as they have medicinal importance and also very effective in preventing the destructive processes caused by oxidative stress and also reduces both psychological and physiological stress. Since, plants possess enormous benefits, it was decided to study *Ricinus communis, Muntingia calabura, Pongamia pinnata, Wrightia tinctoria, Ficus religiosa, Thespesia populnea, Polyalthia longifolia,Saraca asoca, Senna siamea, Phyllanthus reticulates, Tecoma stans, Syzygium cumini, Artocarpus heterophyllus, Ficus carcia, Psidium guajava, Avocado, Pisum sativam, Phyllanthus emblica, Mangifera indica* plants from places around salem. Phenolic content was high in most of the plants studied fom the study area when compared to flavonoid content. The nitric oxide scavenging activity, hydrogen peroxide scavenging activity, iron chelating activity, reducing power activity was found to be moderate with all the plants studied from the study area. The reducing power activity was high with plants studied from Balaji rubber industry,Rasipuram,Namakkal, Tamil Nadu, India. The carotenoid content was high in most of the plants studied from the study area. Similarly, the protein content was high in most of the plants studied from Asian rubber industries, Kandhampatti, Salem, Tamil Nadu, India. While, carbohydrate and amino acid content was found to be moderate in most of the studied plants except very few plants.

Key words: Antioxidant activity, Nutrients, Secondary metabolites.

INTRODUCTION

Plant extracts are very much effective with reduced toxicity and are good source of antioxidants since olden days.(Awaad AS,2011) The effectiveness was due to the presence of phenolic acids, polyphenols, tannins, stilbenes, lignans and flavonoids in leaves, floweing parts, stem, barks that could scavenge free radicals like peroxide, hydroperoxide, lipid peroxide thereby inhibiting oxidative mechanisms like quenching singlet oxygen, hydroperoxide decomposition, suppressing enzymes of reactive oxygen generation, chelating metal ions that are prooxidative in nature(Wu YY, 2011 and Carocho M, 2013 and Martysiak-Zurowska D, 2012

and Larson RA, 1988).The antioxidants are low in molecular weight and function as redox buffers , interacting with numerous cellular biomolecules so as to influence plant growth and development starting from mitosis, cell elongation to senescence and death and also influence gene expression specific for biotic, abiotic stress factors to enhance defense mechanism. Plants producing more antioxidants have the ability to tolerate ultra violet radiation.Hence, the present study was planned to study the antioxidant activities for the plants selected near the study area and their co-ordinates (Fig.1): Asian rubber Industry, Kandampatty Byepass, Salem (Lat.11°39'04.71"N,Lon.78°07'21.68"E);KMBGranitesPVT.LTD.,Kottagoundam patty, Salem(Lat.11°43'7.41"N,Lon.78°4'16.55"E);Balajirubberindustry,Rasipuram,Namakkal(Lat.11°27'26.65"N, Lon.78°11'25.75"E);JSWSteelPVT.LTD,Mecheri,Salem(Lat.11°49'25.21"N,Lon.78°12'37.18"E);Quarry,Th annithotti,Salem(Lat.11°43'50.17"N,Lon.78°4'33.64"E);LakeView,Yercaud,Salem(Lat.11°47'1.53"N,Lon.7 8°12'37.18"E);Duroflexcompany,Karimangalam,Dharmapuri(Lat.12°18'5.74"N,Lon.78°14'6.70"E).Their short forms represent the following:Lon.-longitude;Lat.- latitude;E-east;N-north;°-degree;'-minutes;''-seconds,in and around Salem,Krishnagiri Districts of Tamil Nadu, India. The following plants were collected and studied from seven different places: *Ricinus communis, Muntingia calabura, Pongamia pinnata, Wrightia tinctoria, Ficus religiosa, Thespesia populnea, Polyalthia longifolia,Saraca asoca, Senna siamea, Phyllanthus reticulates, Tecoma stans, Syzygium cumini, Artocarpus heterophyllus, Ficus carcia, Psidium guajava, Avocado, Pisum sativam, Phyllanthus emblica, Mangifera indica*.

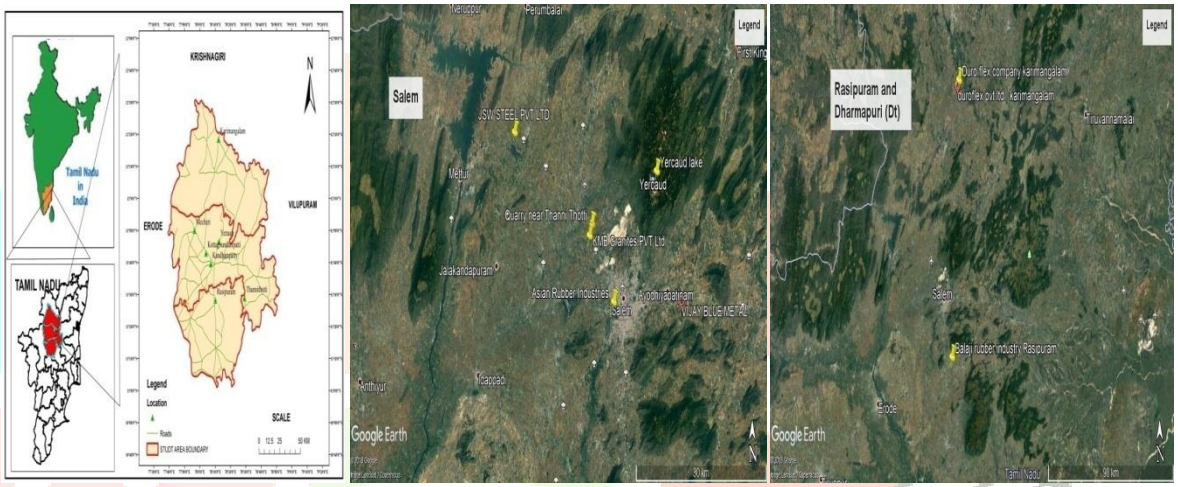

Fig .1 Showing the locations of study area and their Co-ordinates in and around Salem, Namakkal, Dharmapuri Dist. Tamil Nadu, India

MATERIALS AND METHOD

Leaf sample collection: After a general survey on plants available in the selected location, common plants were selected for the present study and identified using google search for confirmation. Matured leaves were collected freshly on the day of experiment and brought to the laboratory for research work.

Extract preparation: All estimations were done in aqueous extract.

Determination of total phenol : Folin-Ciocalteau method was adopted (Ebrahimzadeh MA and Hosseinimehr SJ, 2008a), (Ebrahimzadeh MA and Pourmorad F, 2008b), Nabavi SM and Ebrahimzadeh MA, 2008).To 0.1ml extract 5ml Folin Ciocalteu reagent was added and kept at RT for 5 min, then 4 ml 1M aqueous Na2CO3 was added and incubated at RT for 15min, the color developed was read at 765 nm using UV spectrophotometer. The standard used was gallic acid. Obtained phenol values were expressed as gallic acid equivalent(mg/g).

Determination of total flavonoid: It was performed as per Ordon-Ez AA and Gomez JD, 2006.To0.1ml extract, added 0.5ml 2% $AlCl_3$,and kept at RT for 1h,measured at 420 nm using spectrophotometer. Quercetin was used as a standard and the results were expressed as quercetin equivalent (mg/g).

Determination of reducing power activity: It was done according to Oyaizu M 1986. To the extract 0.1ml, added 1ml phosphate buffer, 5ml 1% potassium ferricyanide. Mixed and incubated for 20min.at 50°C. To all the tubes added 5ml 10% TCA, centrifuged for 10 min at 1000 rpm. To the supernatant 5ml, added distilled water 5ml,1ml 0.1%ferric chloride vortexed. The absorbance was read at 700nm using spectrophotometer.

Determination of Nitric oxide scavenging activity: Garrat DC, 1964 method was used to determine nitric oxide scavenging activity.[11]To 0.1ml extract, added 2ml 10mM sodium nitroprusside in phosphate buffered saline, incubated for 2hours at 30˚C, to this 0.5ml of Griess reagent was added and the absorbance was read at 550nm using spectrophotometer.

Determination of Total antioxidant activity: To 0.1mL extract added 4.5 ml reagent solution (0.6 M sulfuric acid, 28mM sodium phosphate, 4mM ammonium molybdate). Kept in boiling water bath (95°C) for 90min.Cooled and measured the absorbance at 695nm. This was done as per Prieto P, 1999 and Prasad KN 2009.

Determination of metal chelating activity: To 0.1ml extract added 50µl 2mM $FeCl_2$, 0.2ml 5Mm ferrozine and incubated at room temperature for 10min. Ascorbic acid was used as a standard. The absorbance was measured at 562nm with spectrophotometer. This experiment was done according to Dinis TCP, 1996.

Determination of hydrogen peroxide scavenging activity: To 0.1ml extract,0.6ml 40mM hydrogen peroxide was added and incubated for 10minutes. Blank was developed simultaneously with phosphate buffer alone. The absorbance was read at 230nm using spectrophotometer. Ruch RJ, 1989 method was adopted.

Assessment of carbohydrate:100mg leaf sample was hydrolyzed for 3 hours in 5ml 2.5N HCl, cooled to RT, neutralized with sodium carbonate, made up to 100mL and centrifuged. 0.1ml supernatant was used for the analysis.Glucose standard, blank was also developed simultaneously.4ml anthrone reagent was added to all the tubes and kept in boiling water bath for 8 minutes. Cooled and read at 630nm using spectrophotometer (Hedge JE, 1962).

Assessment of protein: To 0.1ml extract, added 2ml alkaline copper reagent, and incubated for 10minutes, then 0.2ml of Folin ciocalteau reagent was added and again incubated for30minutes.BSA was used as a standard.The absorbance was measured at 660nm using spectrophotometer (Lowry OH, 1951).

Assessment of amino acid: To the extract 0.1 ml, added 1ml ninhydrin in Butanol: Acetone. Close the tubes with aluminum foil and the contents in the tubes were heated for 4-7 minutes at 80-100ºC with mild stirring. Cooled and measured the absorbance at 570nm.Tyrosine was used as a standard. Ninhydrin method was used for amioacid assay. (Yemm EW, 1955)

Assessment of Tannin content: To 0.1 ml extract, added 7.5ml distilled water, 0.5ml Folin phenol reagent, 1ml 35% sodium carbonate, made upto 10 ml with distilled water. Mixed well and kept at RT for 30min. Simultaneously, the blank and standard was also developed. Measured the absorbance at 700nm using UV/ Visible spectrophotometer. The results were expressed in terms of mg tannic acid equivalents/ g dried sample. Folin-Ciocalteu method was adopted (Naima S, 2012 and Govindappa M, 2011) .

All the experiments were done in triplicates and measured with UV spectrophotometer Schimadzu Model 1800. Standard graph was plotted and the samples were plotted against the standard.

Stastical tool: Mean,Standard deviation (S) was calculated by Mean = Sum of x values / n (Number of values)

$$SD = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}}$$

RESULTS AND DISCUSSION

The results of Secondary Metabolites, Antioxidant activity of plants selected from the study areas were Tabulated (Table 1 to Table 3) and discussed below:

Table 1. Analysis of Secondary Metabolites, Antioxidant activity of plants selected from the study area

Botanical Name	Flavonoid (mg/g)	Phenolics (mg/g)	Tannin (mg/g)	Antioxidant activity (mg/g)	NOsca. activity (mg/g)	H_2O_2 sca.activity(mg/g)	Ironchelating activity(mg/g)	Reducing power assay(mg/g)
Near Lake View, Ondikadai,Yercaud,Salem,Tamil Nadu,India								
Artocarpus heterophyllus	10.4±0.5	15.0±3.1	5.0±2.1	4.8±0.6	10.3±0.0	0.7±0.0	1.1±0.0	5.1±0.4
Ficuscarcia	7.2±0.8	19.0±2.7	11.0±4.0	3.9±1.0	4.7±1.7	1.4±0.1	2.0±0.4	2.2±0.4
Psidium guajava	3.6±0.7	6.7±0.0	8.4±0.7	6.6±1.2	6.0±0.0	2.4±0.1	2.8±0.4	2.3±0.1
Syzygium cumini	10.8±2.2	7.7±0.1	4.2±0.5	5.8±1.2	10.1±0.6	1.1±0.1	2.0±0.3	3.6±0.1
Avocado	11.4±3.0	4.6±2.7	6.2±3.0	4.7±0.5	10.3±3.0	1.8±0.2	3.2±0.4	6.5±0.3
Pisum sativam	5.9±0.9	7.7±3.7	7.8±0.9	4.8±1.2	6.1±2.0	2.8±0.2	2.0±0.2	3.6±0.2

Asian rubber industries, Kandhampatti, Salem, Tamil Nadu, India								
Ricinus communis	9.50±0.60	22.2±1.20	31.46±1.6	15.1±1.01	4.3±1.15	1.51±0.26	2.40±0.60	1.51±0.26
Muntingia calabura	8.36±0.84	6.70±1.20	72.8±0.0	22.6±4.60	8.96±0.74	1.13±0.02	2.86±0.11	1.13±0.02
Pongamia pinnata	9.30±1.60	8.20±0.70	31.7±4.6	21.5±2.00	4.4±0.80	1.95±0.14	4.60±1.00	1.95±0.14
Wrightia tinctoria	10.0±0.00	26.0±1.00	29.46±3.0	14.2±0.00	13.16±0.70	3.70±0.40	3.20±0.40	3.70±0.40
Ficusreligiosa	6.20±1.20	14.3±2.75	18.4±1.2	16.5±0.80	16.6±0.72	2.71±0.56	5.60±0.80	2.71±0.56
Thespesiapopulnea	3.86±0.38	17.03±0.70	52.5±0.22	18.6±2.16	6.30±1.30	1.43±0.08	3.00±0.80	1.43±0.08
Quarry, Thannithotti, Salem, Tamil Nadu, India								
Muntingiacalabura	04.00±0.00	25.53±2.86	35.40±0.00	15.20±0.70	18.80±1.00	3.25±0.24	1.4±0.50	06.3±0.70
Ricinuscommunis	05.00±0.00	40.00±0.00	19.40±1.30	19.26±0.50	14.96±0.35	2.20±0.22	2.9±1.50	05.1±0.74
Pongamia pinnata	09.70±0.55	26.60±1.00	25.80±0.40	22.80±0.20	09.90±0.25	1.35±0.40	4.6±0.31	03.3±0.54
Ficus religiosa	05.36±1.90	25.26±1.20	22.13±0.90	12.40±2.80	21.26±0.50	5.85±0.35	2.6±0.00	13.2±0.80
Wrightia tinctoria	10.43±2.74	28.96±0.69	32.06±2.60	23.26±0.69	16.26±1.00	2.90±0.24	4.4±0.00	15.2±0.40
Balaji rubber industry,Rasipuram,Namakkal, Tamilnadu, India								
Muntingia calabura	14.5±0.50	40.0±0.00	10.6±0.60	27.00±1.60	22.90±1.15	1.55±0.12	1.6±0.40	14.6±0.30
Pongamia pinnata	11.4±0.20	35.6± 5.13	5.20±0.81	16.60±0.50	18.10±1.60	1.93±0.10	4.6±0.31	10.3±0.45
Wrightia tinctoria	7.00±0.00	18.0±1.00	7.60±0.60	23.25±0.67	11.78±1.42	3.26±0.17	4.2±0.00	12.5±0.30
Ricinus communis	6.50±0.61	37.0±2.00	12.2±1.40	23.40±0.40	08.88±0.72	1.70±0.10	2.6±0.40	08.7±0.30
Saraca asoca	7.80±0.81	18.33±0.57	8.40±0.80	16.60±0.31	05.55±0.77	2.70±0.50	3.8±0.40	06.4±0.20

Values are Mean± SD for Three Experiments

Table.1 depict the results of secondary metabolites and its effect on inducing antioxidant activity of plants. **Near Lake View, Ondikadai,Yercaud:** The flavonoid content was high in *Avocado* (11.4±3.0mg/g),*Syzygium cumini* (10.8±2.2), *Artocarpus heterophyllus* (10.4±0.5mg/g), and moderate in *Ficus carcia* (7.2±0.8mg/g), and low in *Pisum sativam*(5.9±0.9mg/g), *Psidium guajava* (3.6±0.7mg/g). Likewise, the phenolics content was high in *Ficus carcia* (19.0±2.7mg/g), *Artocarpus heterophyllus* (15.0±3.1mg/g), and was found to be moderate for *Syzygium cumini*(7.7±0.1mg/g), *Pisum sativam* (7.7±3.7mg/g), *Psidium guajava* (6.7±0.0mg/g),*Avocado*(4.6±2.7mg/g). The tannin content observed was high in *Ficus carcia* (11.0±4.0mg/g), and moderate in *Psidium guajava*(8.4±0.7mg/g), *Pisum sativam* (7.8±0.9mg/g), *Avocado* (6.2±3.0mg/g), *Artocarpus heterophyllus*(5.0±2.1mg/g), *Syzygium cumini* (4.2±0.5mg/g). The antioxidant activity observed was moderate in all the plants studied: *Artocarpus heterophyllus*(4.8±0.6mg/g), *Ficus carcia* (3.9±1.0mg/g), *Psidiumguajava* (6.6±1.2mg/g), *Syzygium cumini*(4.2±0.5mg/g), *Avocado* (6.2±3.0mg/g), *Pisum sativam* (7.8±0.9). The nitric oxide scavenging activity was high in *Artocarpus heterophyllus*(10.3±0.0mg/g),*Avocado*(10.3±3.0mg/g),*Syzygium cumini* (10.1±0.6 mg/g), and moderate in *Pisum sativam* (6.1±2.0mg/g), *Psidium guajava* (6.0±0.0mg/g), *Ficus carcia* (4.7±1.7mg/g).And hydrogen peroxide scavenging activity was low in *Pisum sativam* (2.8±0.2mg/g), *Psidium guajava* (2.4±0.1mg/g), *Avocado*(1.8±0.2mg/g), *Ficus carcia*(1.4±0.1mg/g), *Syzygium cumini* (1.1±0.1mg/g), *Artocarpus heterophyllus* (0.7±0.0mg/g). Similarly, iron chelating activity was also low in

Avocado (3.2±0.4mg/g), *Psidium guajava*(2.8±0.4mg/g), *Ficus carcia*(2.0±0.4mg/g), *Syzygium cumini* (2.0±0.3mg/g), *Pisum sativam*(2.0±0.2mg/g), *Artocarpus heterophyllus* (1.1±0.0mg/g). The reducing power activity was found to be moderate to low in *Avocado* (6.5±0.3mg/g), *Artocarpus heterophyllus*(5.1±0.4mg/g),*Syzygium cumini*(3.6±0.1mg/g),*Pisum sativam* (3.6±0.2 mg/g), *Psidium guajava* (2.3±0.1mg/g), *Ficus carcia* (2.2±0.4mg/g). **Asian rubber industries, kandhampatti, Salem, Tamil Nadu, India :** The flavonoid content was high in*Wrightia tinctoria*(10.0±0.00mg/g), *Ricinus communis* (9.50±0.60mg/g), *Pongamia pinnata*(9.30±1.60mg/g), *Muntingia calabura* (8.36±0.84mg/g), *Ficus religiosa* (6.20±1.20mg/g), *Thespesia populnea* (3.86±0.38mg/g). Likewise, the phenolic content was high in *Wrightia tinctoria* (26.0±1.00mg/g), *Ricinus communis* (22.2±1.20mg/g),*Thespesia populnea* (17.03±0.70mg/g), *Ficusreligiosa* (14.3±2.75mg/g), *Pongamia pinnata* (8.20±0.70mg/g), *Muntingia calabura* (6.70±1.20mg/g). The tannin content was found to be high in all the plants studied: *Muntingia calabura* (72.8±0.0mg/g), *Thespesia populnea* (52.5±0.22mg/g), *Pongamia pinnata* (31.7±4.6mg/g),*Ricinus communis*(31.46±1.6mg/g), *Wrightia tinctoria* (29.46±3.0mg/g), *Ficusreligiosa* (18.4±1.2 mg/g). The antioxidant activity was found to be high in *Muntingia calabura*(22.6±4.60mg/g), *Pongamia pinnata* (21.5±2.00mg/g), *Thespesiapopulnea* (18.6±2.16mg/g), *Ficusreligiosa* (16.5±0.80mg/g), *Ricinus communis* (15.1±1.01mg/g), *Wrightia tinctoria* (14.2±0.00mg/g).The nitric oxide scavenging activity was found to be high in *Ficusreligiosa* (16.6±0.72mg/g), *Wrightia tinctoria* (13.16±0.70mg/g), *Muntingia calabura* (8.96±0.74mg/g), *Thespesiapopulnea* (6.30±1.30mg/g),*Pongamia pinnata* (4.4±0.80mg/g), *Ricinus communis* (4.3±1.15mg/g). The hydrogen peroxide scavenging activity ws found to be low in *Wrightia tinctoria* (3.70±0.40mg/g), *Ficusreligiosa* (2.71±0.56mg/g), *Pongamia pinnata* (1.95±0.14mg/g), *Ricinus communis* (1.51±0.26mg/g), *Thespesia populnea* (1.43±0.08mg/g), *Muntingia calabura* (1.13±0.02mg/g). The iron chelating activity was found to be low in *Ficus religiosa* (5.60±0.80mg/g), *Pongamia pinnata* (4.60±1.00mg/g), *Wrightia tinctoria* (3.20±0.40mg/g), *Thespesia populnea*(3.00±0.80mg/g), *Muntingia calabura* (2.86±0.11mg/g), *Ricinus communis*(2.40±0.60mg/g).The reducing power assay was found to be low in *Wrightia tinctoria* (3.70±0.40mg/g), *Ficusreligiosa* (2.71±0.56mg/g),*Pongamia pinnata*(1.95±0.14mg/g), *Ricinus communis*(1.51±0.26 mg/g), *Thespesiapopulnea* (1.43±0.08mg/g),*Muntingia calabura* (1.13±0.02mg/g).**Quarry, Thannithotti, Salem, Tamil Nadu, India :**The flavonoid content observed was moderate for the plants studied: *Wrightia tinctoria* (10.43±2.74mg/g), *Pongamia pinnata* (09.70±0.55mg/g), *Ficus religiosa* (05.36±1.90mg/g), *Ricinus communis* (05.00±0.00mg/g), *Muntingia calabura* (04.00±0.00mg/g). The phenolics, tannin content observed was high in all the plants studied: *Ricinus communis* (40.00±0.00, 19.40±1.30mg/g), *Wrightia tinctoria* (28.96±0.69, 32.06±2.60mg/g), *Pongamia pinnata* (26.60±1.00,25.80±0.40mg/g), *Muntingiacalabura* (25.53±2.86, 35.40±0.00mg/g), *Ficus religiosa* (25.26±1.20, 22.13±0.90mg/g). The antioxidant activity was also found to be high in *Wrightia tinctoria* (23.26±0.69mg/g), *Pongamia pinnata* (22.80±0.20mg/g), *Ricinus communis* (19.26±0.50mg/g), *Muntingia calabura* (15.20±0.70mg/g), *Ficus religiosa* (12.40±2.80mg/g). The nitric oxide scavenging activity was also found to be high in *Ficus religiosa* (21.26±0.50mg/g), *Muntingia calabura* (18.80±1.00mg/g), *Wrightia tinctoria* (16.26±1.00mg/g), *Ricinus communis*(14.96±0.35mg/g), *Pongamia pinnata* (09.90±0.25mg/g). The hydrogen peroxide scavenging activity was moderate for *Ficus religiosa* (5.85±0.35mg/g), *Muntingiacalabura* (3.25±0.24mg/g), *Wrightia tinctoria* (2.90±0.24mg/g), *Ricinuscommunis*(2.20±0.22mg/g), *Pongamia pinnata* (1.35±0.40mg/g). The iron chelating activity was also moderate in all the plants studied: *Pongamia pinnata* (4.6±0.31mg/g), *Wrightia tinctoria* (4.4±0.00mg/g), *Ricinus communis* (2.9±1.50mg/g), *Ficus religiosa* (2.6±0.00mg/g), *Muntingia calabura* (1.4±0.50mg/g). The reducing powerassay was high in *Wrightia tinctoria* (15.2±0.40mg/g), *Ficus religiosa* (13.2±0.80mg/g), while it was moderate in *Muntingia calabura* (06.3±0.70mg/g), *Ricinus communis*(05.1±0.74mg/g), *Pongamia pinnata* (03.3±0.54mg/g).**Balaji rubber industry,Rasipuram,Namakkal, Tamil Nadu, India:** The flavonoid content was moderate to high in the plants studied: *Saraca asoca*(7.80±0.81mg/g),*Wrightia tinctoria*(7.00±0.00mg/g), *Ricinus communis* (6.50±0.61mg/g), *Muntingia calabura*(14.5±0.50mg/g), *Pongamia pinnata* (11.4±0.20mg/g). The phenolic content was high in all the plants studied: *Muntingia calabura* (40.0±0.00mg/g), *Ricinus communis*(37.0±2.00mg/g), *Pongamia pinnata* (35.6± 5.13mg/g), *Saraca asoca* (18.33±0.57mg/g),

Wrightia tinctoria (18.0±1.00mg/g). The tannin content found was high to moderate in the plants: *Ricinus communis*(12.2±1.40mg/g), *Muntingia calabura* (10.6±0.60mg/g), *Saraca asoca* (8.40±0.80mg/g), *Wrightia tinctoria* (7.60±0.60mg/g), *Pongamia pinnata* (5.20±0.81mg/g). The antioxidant activity was high in (27.0±1.60mg/g), *Ricinus communis* (23.40±0.40mg/g), *Wrightia tinctoria* (23.25±0.67mg/g), *Pongamia pinnata* (16.60±0.50mg/g), *Saraca asoca* (16.60±0.31mg/g). The nitric oxide scavenging activity was *Muntingia calabura* (22.90±1.15mg/g), *Pongamia pinnata* (18.10±1.60mg/g), *Wrightia tinctoria* (11.78±1.42mg/g), *Ricinus communis* (08.88±0.72mg/g), *Saraca asoca* (05.55±0.77mg/g).The hydrogen peroxide activity was low in *Wrightia tinctoria* (3.26±0.17mg/g), *Saraca asoca* (2.70±0.50mg/g), *Pongamia pinnata* (1.93±0.10mg/g), *Ricinus communis* (1.70±0.10mg/g),*Muntingiacalabura* (1.55±0.12mg/g).The iron chelating activity was moderate in *Pongamia pinnata (*4.6±0.31mg/g), *Wrightia tinctoria* (4.2±0.00mg/g), *Saraca asoca* (3.8±0.40mg/g), *Ricinus communis* (2.6±0.40mg/g), *Muntingia calabura* (1.6±0.40mg/g). The observed changes in phenolic content might be due to thelocation, climatic condition like temperature, rainfall, seasonal variation, maturity period etc.(Shan B , 2005). The antioxidant and other pharmaceutical activity might be affected based on the topography, ecology, region (Zheng W 2001).

Table 2. Analysis of Secondary Metabolites, Antioxidant activity of plants selected from the study area

Botanical Name	Flavonoid (mg/g)	Phenolic (mg/g)	Tannin (mg/g)	Antioxidantactivity(mg/g)	NOsca.activity (mg/g)	H_2O_2sca. activity(mg/g)	Ironchelating activity(mg/g)	Reducing power assay(mg/g)
Near Durofex company Karimangaam,Dharmapuri Tamil Nadu, India								
Mutingia calabura	07.6±0.77	15.4±0.4	11.6±0.14	20.2±3.30	06.3±0.45	1.96±0.12	04.8±0.61	13.1±0.74
Phyllanthus emblica	09.0±1.40	16.4±0.2	11.8±0.60	23.0±1.30	08.0±1.34	1.56±0.12	03.3±0.34	06.3±00.1
Mangifera indica	05.9±0.53	15.8±0.2	13.6±1.42	0.16±0.04	12.5±1.14	3.26±0.17	03.0±0.06	14.9±0.26
Wrightia tinctoria	08.8±0.14	14.9±0.3	09.3±0.31	12.6±0.06	09.4±0.06	1.66±0.16	02.6±0.31	07.1±0.34
Ricinus communis	09.3±0.40	12.8±0.6	07.6±0.02	24.6±0.05	05.3±0.65	2.70±0.15	03.4±0.31	14.9±0.36
Near JSW steel Ltd, Mecheri, Tamil Nadu, India								
Senna siamea	9.50±3.50	5.60±1.8	3.8±1.3	2.9±0.6	6.6±2.1	0.6±0.1	1.6±0.0	4.6±0.4
Phyllanthus reticulatus	6.40±0.20	13.9±2.6	7.0±0.8	4.7±1.2	4.0±1.0	1.3±0.1	2.2±0.6	3.0±0.1
Tecoma stans	10.0±1.30	14.9±1.7	9.0±0.6	6.2±1.9	5.6±0.8	2.3±0.1	2.2±0.2	3.4±0.4
Terminalia catappa	5.50±0.50	14.9±1.6	6.6±1.4	8.7±3.2	3.0±1.5	1.1±0.1	1.6±0.4	7.1±0.3
Syzygium cumini	8.70±1.64	3.50±0.6	8.0±1.0	4.0±0.9	6.8±1.1	1.8±0.0	2.6±0.2	1.7±0.2
Thespesia populnea	4.70±1.00	4.80±2.1	6.8±1.9	6.4±0.6	4.7±1.0	2.9±0.1	2.0±0.2	7.8±0.6
Near KMB Granites PVT. LTD. Kottagoundampatty, Salem								
Muntingia calabura	36.0±1.00	8.70±0.00	10.9±2.01	15.8±4.26	9.3±0.10	2.00±0.24	1.8±0.60	5.9±0.26
Ricinus communis	39.0±1.00	5.60±0.26	07.7±3.46	18.4±0.40	7.5±1.80	1.71±0.22	2.4±0.80	4.8±0.25
Wrightia tinctoria	32.0±1.83	4.80±0.00	08.4±0.90	36.4±16.0	7.9±1.06	3.10±0.22	5.4±0.50	13.9±0.74
Pongamia pinnata	15.0±2.00	0.98±1.00	05.5±4.80	12.1±0.14	5.3±3.50	1.41±0.22	3.0±0.31	5.7±0.67

Ficus religifoila	17.0±1.00	03.9±0.07	08.9±6.70	17.0±0.31	6.3±2.90	2.10±0.74	5.8±1.00	2.8±0.40
Polyalthia longifolia	25.0±2.00	10.3±0.14	15.4±1.00	20.6±0.20	7.8±4.2S	3.05±0.24	6.9±1.60	11.7±0.50

Values are Mean± SD for Three Experiments

Table.2 shows the result of secondary metabolites, antioxidant activity of plants selected from the study area.**Near Durofex company Karimangaam,Dharmapuri Tamil Nadu, India:** The flavonoid content was found to be moderate in *Ricinus communis* (09.3±0.40mg/g), *Phyllanthus emblica* (09.0±1.40mg/g), *Wrightia tinctoria* (08.8±0.14mg/g), *Mutingia calabura* (07.6±0.77mg/g), *Mangifera indica* (05.9±0.53mg/g). The phenolic, tannin content was high in *Phyllanthus emblica* (16.4±0.2, 11.8±0.60mg/g), *Mangifera indica* (15.8±0.2,13.6±1.42mg/g),*Mutingia calabura* (15.4±0.4, 11.6±0.14mg/g), *Wrightia tinctoria* (14.9±0.3,9.3±0.31mg/g), *Ricinus communis*(12.8±0.6,07.6±0.02mg/g). The antioxidant activity was high in *Ricinus communis* (24.6±0.05mg/g), *Phyllanthus emblica* (23.0±1.30mg/g), *Mutingia calabura* (20.2±3.30mg/g), and moderate in *Wrightia tinctoria* (12.6±0.06mg/g) and very low in *Mangifera indica* (0.16±0.04mg/g). The nitric oxide scavenging activity was found to be moderate in *Mangifera indica* (12.5±1.14mg/g), *Wrightia tinctoria* (09.4±0.06mg/g), *Phyllanthus emblica* (08.0±1.34mg/g), *Mutingiacalabura* (06.3±0.45mg/g),*Ricinus communis* (05.3±0.65mg/g). The hydrogen peroxide scavenging activity was found to be moderate to low in *Mangifera indica* (3.26±0.17mg/g), *Ricinus communis* (2.70±0.15mg/g),*Mutingia calabura* (1.96±0.12mg/g),*Wrightiatinctoria* (1.66±0.16mg/g), *Phyllanthus emblica* (1.56±0.12mg/g). The iron chelating activity was moderate in *Mutingia calabura*(04.8±0.61mg/g), *Ricinus communis* (03.4±0.31mg/g), *Phyllanthus emblica*(03.3±0.34mg/g), *Mangifera indica* (03.0±0.06mg/g), *Wrightiatinctoria* (02.6±0.31mg/g). The reducing power activity was high in *Ricinus communis* (14.9±0.36mg/g), *Mangifera indica*(14.9±0.26mg/g), *Mutingia calabura* (13.1±0.74mg/g), and moderate in *Wrightia tinctoria* (07.1±0.34mg/g), *Phyllanthus emblica* (06.3±00.1mg/g).**Near JSW steel Ltd, Mecheri, Tamil Nadu, India:** The flavonoid content was found to be moderate in *Tecoma stans*(10.0±1.30mg/g), *Senna siamea* (9.50±3.50mg/g), *Syzygium cumini* (8.70±1.64mg/g), *Phyllanthus reticulatus* (6.40±0.20mg/g), *Terminalia catappa*(5.50±0.50mg/g), *Thespesia populnea* (4.70±1.00mg/g). The phenolic level was found to be higher in *Terminalia catappa* (14.9±1.7mg/g), *Tecoma stans* (14.9±1.7mg/g), *Phyllanthus reticulatus*(13.9±2.6mg/g), and moderate in *Senna siamea* (5.60±1.8mg/g), *Thespesia populnea* (4.80±2.1mg/g), *Syzygium cumini* (3.50±0.6mg/g). The tannin level was moderate in all the plants studied: *Tecoma stans* (9.0±0.6mg/g), *Syzygium cumini* (8.0±1.0mg/g), *Phyllanthus reticulatus* (7.0±0.8mg/g), *Thespesia populnea* (6.8±1.9mg/g),*Senna siamea* (3.8±1.3mg/g). Likewise, the antioxidant, nitric oxide scavenging activity was also moderate in the studied plants: *Terminalia catappa* (8.7±3.2,3.0±1.5mg/g), *Thespesia populnea*(6.4±0.6,4.7±1.0mg/g), *Tecoma stans* (6.2±1.9,5.6±0.8mg/g), *Phyllanthus reticulates* (4.7±1.2, 4.0±1.0mg/g), *Syzygium cumini* (4.0±0.9, 6.8±1.1mg/g), *Senna siamea* (2.9±0.6,6.6±2.1mg/g). The iron chelating and reducing power activity was also moderate in *Syzygium cumini* (2.6±0.2, 1.7±0.2mg/g), *Phyllanthus reticulates* (2.2±0.6, 3.0±0.1mg/g), *Tecoma stans* (2.2±0.2,3.4±0.4mg/g), *Thespesia populnea* (2.0±0.2mg/g), *Terminalia catappa* (1.6±0.4mg/g), *Senna siamea* (1.6±0.0, 4.6±0.4mg/g).The reducing power activity was high in *Thespesia populnea* (7.8±0.6mg/g), *Terminalia catappa* (7.1±0.3mg/g). **Near KMB Granites PVT. LTD. Kottagoundampatty, Salem:**The flavonoid content was found to be high in *Ricinus communis* (39.0±1.00mg/g), *Muntingia calabura* (36.0±1.00mg/g), *Wrightia tinctoria* (32.0±1.83mg/g), *Polyalthia longifolia* (25.0±2.00mg/g), *Ficus religifoila* (17.0±1.00mg/g), *Pongamia pinnata* (15.0±2.00mg/g). The phenolic content was high in *Polyalthia longifolia* (10.3±0.14mg/g), *Muntingia calabura* (8.70±0.00mg/g), and moderate in *Ricinus communis*(5.60±0.26mg/g), *Wrightia tinctoria* (4.80±0.00mg/g), *Ficus religifoila* (03.9±0.07mg/g), and very low in *Pongamia pinnata*(0.98±1.00mg/g). The tannin content was high in *Polyalthia longifolia* (15.4±1.00mg/g), *Muntingia calabura* (10.9±2.01mg/g), and moderate in *Ficus religifoila* (08.9±6.70mg/g), *Wrightia tinctoria* (08.4±0.90), *Ricinus communis*(07.7±3.46mg/g), *Pongamia pinnata* (05.5±4.80mg/g). The antioxidant activity observed was high in *Wrightia tinctoria* (36.4±16.0mg/g), *Polyalthia longifolia* (20.6±0.20mg/g), *Ricinus communis* (18.4±0.40mg/g), *Ficus religifoila*

(17.0±0.31mg/g), *Pongamia pinnata*(12.1±0.14mg/g), *Muntingia calabura* (15.8±4.26mg/g). The nitric oxide scavenging activity observed was moderate in *Muntingia calabura* (9.3±0.10mg/g), *Wrightia tinctoria* (7.9±1.06mg/g), *Polyalthia longifolia* (7.8±4.2Smg/g), *Ricinus communis*(7.5±1.80mg/g), *Ficus religifoila* (6.3±2.90mg/g), *Pongamia pinnata* (5.3±3.50mg/g). The hydrogen peroxide scavenging activity was found to be moderate in *Wrightia tinctoria* (3.0±0.31mg/g), *Polyalthia longifolia* (3.05±0.24mg/g), *Ficus religifoila* (2.10±0.74mg/g), *Muntingia calabura* (2.00±0.24mg/g), *Ricinus communis* (1.71±0.22mg/g), *Pongamia pinnata* (1.41±0.22mg/g).The iron chelating activity was high in *Polyalthia longifolia*(6.9±1.60mg/g), *Ficus religifoila* (5.8±1.00mg/g), *Wrightia tinctoria* (5.4±0.50mg/g) and moderate in *Pongamia pinnata* (3.0±0.31mg/g), *Ricinus communis* (2.4±0.80mg/g), *Muntingia calabura* (1.8±0.60mg/g). The reducing power activity was high in *Wrightia tinctoria* (13.9±0.74mg/g), *Polyalthia longifolia* (11.7±0.50mg/g), and moderate in *Muntingia calabura* (5.9±0.26mg/g), *Pongamia pinnata* (5.7±0.67mg/g),*Ricinus communis* (4.8±0.25mg/g), *Ficus religifoila*(2.8±0.40mg/g). Phenolic compoundsderived from phenylalanine and tyrosine are secondary metabolites (Harborne JB 2000) which were able to inhibit free radicals,inactivate metals, decompose peroxides in order to reduce oxidative stress (Oberai HS, 2015) and help in protecting against cancer and other diseases (Biju J, 2014).

Table.3. Carotenoid , nutrient analysis of selected plants plants selected from the study area

Botanical name	Carotenoids (mg/g)	Protein (mg/g)	Carbohydrate (mg/g)	Aminoacid (mg/g)
Near Lake View, Ondikadai,Yercaud,Salem,TamilNadu,India				
Artocarpus heterophyllus	23.0±09.6	07.4±0.2	4.1±0.1	5.5±0.8
Ficuscarcia	19.4±08.2	13.4±0.4	2.2±0.1	4.8±0.0
Psidiumguajava	10.4±07.4	05.0±0.3	3.6±0.1	5.4±0.1
Syzygiumcumini	24.1±12.8	10.0±0.4	2.9±0.2	1.0±0.2
Avocado	25.1±00.5	03.6±0.4	5.0±0.1	5.7±0.4
Pisum sativam	06.8±01.7	08.6±0.6	7.0±0.1	5.0±0.2
Asian rubber industries, Kandhampatti, Salem, Tamil Nadu, India				
Ricinus communis	3.43±2.20	13.2±0.70	6.00±0.50	5.60±1.64
Muntingia calabura	3.55±2.55	21.4±0.20	3.90±0.55	4.80±0.45
Pongamia pinnata	6.68±3.18	13.6±0.10	7.30±0.20	4.70±0.60
Wrightia tinctoria	16.6±3.39	16.6±0.00	9.83±0.84	6.60±1.74
Ficusreligiosa	17.33±1.57	15.9±0.60	7.36±0.34	6.10±0.10
Thespesiapopulnea	16.9±3.05	9.83±0.34	3.50±0.20	8.53±1.04
Quarry, Thannithotti, Salem, Tamil Nadu, India				
Muntingiacalabura	31.70±09.62	08.80±1.00	06.8±0.7	09.40±0.00
Ricinuscommunis	62.71±40.28	09.90±0.50	04.9±0.5	11.43±0.07
Pongamia pinnata	89.91±53.28	09.93±0.54	04.7±0.5	13.03±0.84
Ficus religiosa	41.80±29.32	08.50±0.60	12.7±0.5	05.80±0.10
Wrightia tinctoria	11.85±05.77	13.00±1.00	04.1±0.4	07.80±0.10
Balaji rubber industry,Rasipuram,Namakkal,TamilNadu, India				
Mutingiacalabura	13.33±01.82	07.60±0.70	6.98±0.35	4.93±1.63
Phyllanthusemblica	18.05±00.73	08.00±1.00	3.91±0.20	3.60±0.20
Mangiferaindica	12.71±03.08	12.38±0.60	5.50±0.25	3.50±0.30
Wrightiatinctoria	87.85±11.34	07.10±0.50	4.50±0.25	4.60±0.30
Ricinuscommunis	07.91±00.87	08.33±0.32	08.0±0.40	6.53±0.05
Near Duroflex company Karimangalam,Dharmapuri Tamil Nadu, India				
Mutingiacalabura	12.61±7.32	04.7±0.60	12.2±0.30	5.50±1.62
Phyllanthusembica	11.86±5.04	05.1±1.25	11.6±0.22	6.70±1.64
Mangiferaindica	32.66±0.36	06.2±0.75	04.8±0.20	5.10±0.72
Wrightiatinctoria	16.48±3.12	07.4±0.44	05.7±03.4	4.60±0.20
Ricinuscommunis	06.45±2.04	07.9±0.94	06.8±0.60	6.10±0.10
Near JSW steel Ltd, Mecheri, Tamil Nadu, India				
Senna siamea	15.1±1.00	07.4±0.2	4.2±0.2	3.3±0.3

Phyllanthusreticulatus	07.6±0.00	13.6±0.6	2.1±0.2	2.5±0.3
Tecoma stans	13.7±3.45	05.0±0.6	3.5±0.1	1.5±0.3
Terminaliacatappa	21.9±6.30	10.2±0.8	3.1±0.2	4.1±0.2
Syzygium cumini	02.8±1.40	03.8±0.2	4.9±0.2	2.9±0.4
Thespesia populnea	14.4±12.6	09.4±0.6	6.7±0.1	2.8±0.6
Near KMB Granites PVT. LTD. Kottagoundampatty, Salem				
Muntingia calabura	32.6±10.80	08.23±1.05	6.83±0.40	3.30±0.5
Ricinus communis	31.2±04.35	07.40±0.51	4.00±0.30	6.20±0.3
Wrightia tinctoria	06.45±16.9	08.70±0.55	3.13±0.25	3.50±0.5
Pongamia pinnata	97.3±05.60	07.70±3.30	3.86±0.34	5.93±0.5
Ficus religifoila	35.8±17.27	10.90±0.65	4.90±0.10	3.70±0.1
Polyalthia longifolia	30.3±16.11	07.80±0.80	7.13±0.34	3.80±0.6

Values are Mean± SD for Three Experiments

Table.3 depicts the result of carotenoid and nutrient content assessed in plants from the selected study area. **Near Lake View, Ondikadai,Yercaud,Salem,Tamil Nadu,India:** The carotenoid content was found to be high in *Artocarpus heterophyllus*(23.0±09.6mg/g), *Avocado* (25.1±00.5mg/g), *Syzygiumcumini* (24.1±12.8mg/g), *Ficuscarcia*(19.4±08.2mg/g), *Psidiumguajava* (10.4±07.4mg/g), *Pisum sativam* (06.8±01.7mg/g). The protein content was found to be high in *Ficuscarcia* (13.4±0.4mg/g), *Syzygiumcumini* (10.0±0.4mg/g), and moderate in *Pisum sativam* (08.6±0.6mg/g), *Artocarpusheterophyllus* (07.4±0.2mg/g),*Psidiumguajava* (05.0±0.3mg/g), *Avocado* (03.6±0.4mg/g).The carbohydrate content was found to be moderate in *Pisum sativam*(7.0±0.1mg/g), *Avocado* (5.0±0.1mg/g), *Artocarpusheterophyllus* (4.1±0.1mg/g), *Psidiumguajava* (3.6±0.1mg/g), *Syzygiumcumini* (2.9±0.2mg/g), *Ficuscarcia* (2.2±0.1mg/g). The amino acid content was found to be moderate in *Avocado* (5.7±0.4mg/g), *Artocarpusheterophyllus* (5.5±0.8mg/g), *Psidiumguajava* (5.4±0.1mg/g), *Pisum sativam* (5.0±0.2mg/g), *Ficuscarcia* (4.8±0.0mg/g), and low in *Syzygiumcumini* (1.0±0.2mg/g). **Asian rubber industries, Kandhampatti, Salem, Tamil Nadu, India**: The carotenoid content was found to be high in *Ficusreligiosa* (17.33±1.57mg/g), *Thespesia populnea* (16.9±3.05mg/g), *Wrightia tinctoria* (16.6±3.39mg/g) and was found to be low in *Pongamia pinnata* (6.68±3.18mg/g), *Muntingia calabura* (3.55±2.55mg/g), *Ricinus communis* (3.43±2.20mg/g). The protein content was found to be high in *Muntingia calabura* (21.4±0.20mg/g),*Wrightia tinctoria* (16.6±0.00mg/g),*Ficus religiosa*(15.9±0.60mg/g), *Pongamia pinnata***(**13.6±0.10mg/g**),** *Ricinus communis* (13.2±0.70mg/g), *Thespesia populnea* (9.83±0.34mg/g).The carbohydrate content was found to be moderate in *Wrightia tinctoria* (9.83±0.84mg/g), *Ficusreligiosa* (7.36±0.34mg/g), *Pongamia pinnata* (7.30±0.20mg/g), *Ricinus communis* (6.00±0.50mg/g), *Muntingia calabura* (3.90±0.55mg/g), *Thespesia populnea* (3.50±0.20mg/g).The aminoacid content was found to be moderate in *Wrightia tinctoria*(6.60±1.74mg/g), *Ficusreligiosa* (6.10±0.10mg/g), *Muntingia calabura* (4.80±0.45mg/g),*Pongamia pinnata* (4.70±0.60mg/g), and high in *Thespesia populnea* (8.53±1.04mg/g).**Quarry, Thannithotti, Salem, Tamil Nadu, India:** The carotenoid content was high in*Pongamia pinnata* **(**89.91±53.28mg/g),*Ricinus communis*(62.71±40.28mg/g), *Ficus religiosa*(41.80±29.32mg/g), *Muntingia calabura*(31.70±09.62mg/g), and low in *Wrightia tinctoria*(11.85±05.77mg/g). The protein content was high in *Wrightia tinctoria*(13.00±1.00mg/g), and moderate in *Pongamia pinnata* (09.93±0.54mg/g), *Ricinus communis* (09.90±0.50mg/g), *Muntingia calabura*(08.80±1.00mg/g),*Ficus religiosa*(08.50±0.60mg/g). The carohydrate content was found to be high in *Ficus religiosa*(12.7±0.5mg/g), and moderate in *Muntingia calabura*(06.8±0.7mg/g), *Ricinus communis* (04.9±0.5mg/g), *Pongamia pinnata*(04.7±0.5mg/g), *Wrightia tinctoria*(04.1±0.4mg/g). The aminoacid content was found to be high in *Pongamia pinnata* (13.03±0.84mg/g), *Ricinus communis*(11.43±0.07mg/g), and moderate in *Muntingia calabura*(09.40±0.00mg/g), *Wrightia tinctoria*(07.80±0.10mg/g),*Ficus religiosa*(05.80±0.10mg/g).**Balaji rubber industry, Rasipuram, Namakkal, Tamil Nadu, India:** The carotenoid content was very high in *Wrightia tinctoria*(87.85±11.34mg/g),and moderate in *Phyllanthusemblica* (18.05±00.73mg/g), *Muntingia calabura*(13.33±01.82mg/g), *Mangifera indica* (12.71±03.08mg/g),*Ricinus communis*(07.91±00.87mg/g).The protein content was moderately high in *Mangifera indica* (12.38±0.60mg/g), and moderate in *Ricinus communis*(08.33±0.32mg/g), *Phyllanthusemblica* (08.00±1.00mg/g),*Muntingia calabura*(07.60±0.70mg/g), *Wrightia tinctoria* (07.10±0.50mg/g). The carbohydrate content was found to be moderate in *Ricinus communis*(08.0±0.40mg/g),*Muntingia calabura*(6.98±0.35mg/g), *Mangifera indica* (5.50±0.25mg/g), *Wrightia*

tinctoria(4.50±0.25mg/g),*Phyllanthus emblica*(3.91±0.20mg/g).The aminoacid content was found to be moderaein *Ricinus communis*(6.53±0.05mg/g), *Muntingia calabura*(4.93±1.63mg/g),*Wrightia tinctoria*(4.60±0.30mg/g), *Phyllanthus emblica* (3.60±0.20mg/g), *Mangifera indica*(3.50±0.30mg/g).**Near Duroflex company Karimangalam, Dharmapuri Tamil Nadu, India:** The carotenoid content was found to be high in *Mangifera indica*(32.66±0.36mg/g), *Wrightia tinctoria* (16.48±3.12mg/g),*Muntingia calabura*(12.61±7.32mg/g), *Phyllanthus emblica*(11.86±5.04mg/g), and low in *Ricinus communis* (06.45±2.04mg/g). The protein content was found to be moderate in *Ricinus communis*(07.9±0.94mg/g),*Wrightia tinctoria* (07.4±0.44mg/g), *Mangifera indica*(06.2±0.75mg/g), *Phyllanthus emblica*(05.1±1.25mg/g), *Muntingia calabura*(04.7±0.60mg/g). The carbohydrate content was high in *Muntingia calabura*(12.2±0.30mg/g), *Phyllanthus emblica*(11.6±0.22mg/g), and moderate in *Ricinus communis*(06.8±0.60mg/g), *Wrightia tinctoria*(05.7±03.4mg/g), *Mangifera indica* (04.8±0.20mg/g). The aminoacid content was moderate in *Phyllanthus emblica* (6.70±1.64mg/g), *Ricinus communis*(6.10±0.10mg/g), *Muntingia calabura* (5.50±1.62mg/g),*Mangifera indica*(5.10±0.72mg/g),*Wrightia tinctoria* (4.60± 0.20mg/g). **Near JSW steel ltd, Mecheri, Tamil Nadu, India:** The carotenoid content was found to be high in *Terminalia catappa*(21.9±6.30mg/g), *Senna siamea*(15.1±1.00mg/g), *Thespesia populnea*(14.4±12.6mg/g), *Tecoma stans*(14.4±12.6mg/g), and moderate in *Phyllanthus reticulatus* (07.6±0.00mg/g), and low in *Syzygium cumini*(02.8±1.40mg/g). The protein content was high in *Phyllanthus reticulatus* (13.6±0.6mg/g), *Terminalia catappa*(10.2±0.8mg/g), and moderate in *Thespesia populnea*(09.4±0.6mg/g),*Senna siamea*(07.4±0.2mg/g), and low in *Tecoma stans*(05.0±0.6mg/g),*Syzygium cumini*(03.8±0.2mg/g). The carbohydrate, aminoacid content was found to be moderate in *Senna siamea*(4.2±0.2, 3.3±0.3mg/g), *Phyllanthus reticulatus* (2.1±0.2, 2.5±0.3mg/g),*Tecoma stans*(3.5±0.1, 1.5±0.3mg/g),*Terminalia catappa*(3.1±0.2, 4.1±0.2mg/g),*Syzygium cumini*(4.9±0.2, 2.9±0.4mg/g), *Thespesia populnea*(6.7±0.1, 2.8±0.6mg/g).**Near KMB Granites PVT. LTD. Kottagoundampatty,Salem :**The carotenoid content washigh in*Pongamia pinnata***(** 97.3±05.60mg/g), *Ficus religifoila*(35.8±17.27mg/g), *Muntingia calabura* (32.6±10.80mg/g), *Ricinus communis* (31.2±04.35mg/g), *Polyalthia longifolia* (30.3±16.11mg/g), low in *Wrightia tinctoria* (06.45±16.9mg/g).The protein content was moderate in *Ficus religifoila* (10.9±0.65mg/g),*Wrightia tinctoria*(08.70±0.55mg/g), *Muntingia calabura*(08.23±1.05mg/g), *Polyalthia longifolia* (07.80±0.80mg/g) *Pongamia pinnata*(07.70±3.30mg/g), *Ricinus communis* (07.40±0.51mg/g). The carbohydrate content was high in *Polyalthia longifolia* (7.13±0.34mg/g), *Muntingia calabura* (6.83±0.40mg/g) and moderate in *Ficus religifoila* (4.90±0.10mg/g), *Ricinus communis* (4.00±0.30mg/g), *Pongamia pinnata* (3.86±0.34mg/g), *Wrightia tinctoria* (3.13±0.25mg/g).The amount of sugar (soluble) present depends on the sensitive nature of plants to air pollution.The amino acid content was found to be modertae in *Ricinus communis* (6.20±0.3mg/g), *Pongamia pinnata* **(**5.93±0.5mg/g), *Polyalthia longifolia* (3.80±0.6mg/g), *Ficus religifoila* (3.70±0.1mg/g), *Wrightia tinctoria* (3.50±0.5mg/g), *Muntingia calabura* (3.30±0.5mg/g).The variation observed in aminoacid content might be due to the presence of sulphur containing aminoacids or might be due to the hydrolysis of protein as a result of protein exposure. The protein content was found to be high in *Ficus religifoila* (10.90±0.65mg/g), *Wrightia tinctoria*(08.70±0.55mg/g), *Muntingia calabura*(08.23±1.05mg/g), *Polyalthia longifolia*(07.80±0.80mg/g), *Pongamia pinnata* (07.70±3.30mg/g), *Ricinus communis* (07.40±0.51mg/g). The variation in aminoacid content reflects the protein content. Carotenoids protect photosynthetic apparatus from light stress, drive away excess energy that are absorbed, scavenge reactive oxygen species room higher temperature.

CONCLUSION

From the result obtained, it is concluded, that the phenolic content was high in most of the plants studied fom the study area. While, the flavonoid content was high in plants from very few sites that were selected for the study. Tannin content was high in *Ficus carcia*,*Phyllanthus emblica*, *Mangifera indica*, *Polyalthia longifolia*. Both tannin and antioxidant activity was high in *Ricinus communis*, *Muntingia calabura*, *Pongamia pinnata*, *Wrightia tinctoria*, *Ficus religiosa*, *Thespesia populnea*. The nitric oxide scavenging activity, hydrogen peroxide scavenging activity, iron chelating activity, reducing power activity was found to be moderate with all the plants studied from the study area. The reducing power activity was high with plants studied from Balaji rubber industry, Rasipuram, Namakkal, Tamil Nadu, India. The carotenoid content was high in most of the plants studied from the study area. Similarly, the protein content was high in most of the plants studied from Asian rubber industries, Kandhampatti, Salem, Tamil Nadu, India. While, carbohydrate and aminoacid content were moderate in most of the studied plants except very few plants.The observed changes might be due to the seasonal variation and pollution load, due to the over exposure to pollution.

CONFLICT OF INTEREST

The author has no conflict of interest

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Reference

1.Awaad AS, El-Meligy RM, Qenawy SA, Atta AH, Soliman GA.Anti-inflammatory, antinociceptive and antipyretic effects of some desert plants. *Journal of Saudi Chemical Society*, 2011;15(4): 367-373.

2. Wu YY, Li W, Xu Y, Jin EH, Tu YY. Evaluation of the antioxidant effects of four main theaflavin derivatives through chemiluminescence and DNA damage analyses. *J* Zhejiang *Univ. Sci.B*.2011;12:744–751.

3.Carocho M, Ferreira ICFR. A review on antioxidants, prooxidants and related controversy: natural and synthetic compounds, screening and analysis methodologies and future perspectives.*Food and Chemical Toxicology*. 2013;51(1):15–25.

4.Martysiak-Zurowskạ D, Wenta WA comparison of ABTS and DPPH methods for assessing the total antioxidant capacity of human milk.*Acta Scientiarum Polonorum Technologia Alimentaria*.2012;11(1):83-9.

5.Larson RA. The antioxidants of higher plants. *Phytochemistry*.1988; 27: 969-78.

6.Ebrahimzadeh MA,Hosseinimehr SJ,Hamidinia A,Jafari M.Antioxidant and freeradical scavenging activity of *Feijoa sallowiana* fruits peel and leaves.Pharmacologyonline.2008a;1:7-14.

7.Ebrahimzadeh MA, Pourmorad F and Bekhradnia AR. Iron chelating activity screening, phenol and flavonoid content of some medicinal plants from Iran.Afr.J.Biotechnol. 2008b;32:43-49.

8.Nabavi SM,Ebrahimzadeh MA,Nabavi SF,Hamidinia A,Bekhradnia AR.Determination of antioxidant activity, phenol and flavonoids content of *Parrotia persica* Mey.Pharmacologyonline.2008;2:560-67.

9.Ordon-Ez AA, Gomez JD, Vattuone MA, Isla MI.Antioxidant activities of *Sechium edule* (Jacq.) Swart extracts.Food Chem.2006; 97: 452-8.

10.Oyaizu M.Studies on product of browning reaction: antioxidative activities of products of browning reaction prepared from glucose amine.Jpn.J.Nutr.1986; 44:307-15.

11.Garrat DC.The Quantitative Analysis of Drugs.Chapman and Hall Ltd, Japan.1964;3:456-58.

12.Prieto P,Pineda M,Anguilar M.Spectrophotometric quantitation of antioxidant capacity through the formation of a Phosphomolybdenum Complex: Specific application to the determination of Vitamin E. Anal. Biochem.1999; 269: 337-41.

13.Prasad KN,Yang B,Yang SY,Chen YL,Zhao MM,Ashraf M,Jiang YM.Identification of phenolic compounds and appraisal of antioxidant and antityrosinase activities from litchi (*Litchi sinensis* Sonn.) seeds.Food Chem. 2009;116:1-7.

14.Dinis TCP, Madeira VMC,Almeida MLM.Action of phenolic derivates (acetoaminophen, salycilate and 5-aminosa lycilate) as inhibitors of membrane lipid peroxidation and as peroxyl radical scavengers. Arch. Biochem. Biophys.1996; 315:161-69.

15.Ruch RJ, Cheng SJ, Klaunig JE. Prevention of cytotoxicity and inhibition of intracellular communication by antioxidant catechins isolated from Chinese green tea. Carcinogenesis .1989; 10:1003.

16.Hedge JE, Hofrelter BT. In:Carbohydrate chemistry.17Eds.Whistler RL, Be Miller JN, Academicpress, NewYork.1962

17.Lowry OH, Rosebrough, NJ, Farr AL, Randall RJ.Protein measurement with folin phenol Reagent.J. Biol. Chem. 1951; 193: 265-75.

18.Yemm EW,Cocking EC,Ricketts RE.The determination of amino acids with ninhydrin.Analyst.1955;80:209-14.

19.Naima S, Muhammad RK, Maria S. Antioxdant activity, total Phenolic, Total Flavanoid contents of whole plant extracts Torilis leptophylla L. BMC Complementary and Alternative medicine.2012; 12:221.

20.Govindappa M, Naga Sravya S, Poojashri MN, Sadananda TS, Chandrappa CP. Antimicrobial, Antioxidant and in virto Anti-inflammatory activity of Ethanol extract and Active Phytochemical screening of *Wedelia trilobata* (L.) Hitchc.journal of Pharmacognosy and Phytochemistry. 2011; 3(3):43-51.

21.Shan B, Cai YZ, Sun M, Corke H. Antioxidant capacity of 26 spice extracts and characterization of their phenolic constituents. J Agric Food Chem. 2005;53:7749-59.

22.Zheng W, Wang SY. Antioxidant activity and phenolic compounds in selected herbs. J Agric Food Chem. 2001;49:5165-70.

23.Harborne JB, Williams CA.Advances in flavonoid research since 1992.Phytochemistry.2000;55:481-504.

24.Oberoi HS, Sandhu SK. Therapeutic and Nutraceutical Potential of Bioactive Compounds Extracted from Fruit Residues AU—Babbar, Neha. Crit. Rev. Food Sci. Nutr. 2015; 55: 319-37.
25.Biju J,Sulaiman CT, Satheesh G, Reddy VRK. Total phenolics and flavonoids in selected medicinal plants from Kerala. Int. J. Pharma. Pharm. Sci. 2014; 6: 406-08.