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Antioxidant Activity Of Endemic Plant Species *Diospyros Sylvaticaroxb*

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INTRODUCTION

Antioxidants are vital substances that protect the body from damages caused by free radical-induced oxidative stress.A variety of natural antioxidants are found in plants.The plant phenolic compounds and flavonoids are the best natural antioxidants having significant efficiency.Flavonoids and phenolic compounds are strong antioxidants capable of scavenging free radicals,antiaging,anticancer activity and enhance human immunity.

Plant based antioxidants are preferred in place of synthetic ones because of their non –toxic nature and effective mechanism of action.Many medicinal plants have ben subjected to assessment of their antioxidative potential.Diospyros is an important genus of Ebenaceae family with more than 500 species. Diospyros sylvatica is an endemic species available in Addatheegala forest a part of Eastern ghats.These species have drawn the attention of investigators by the presence of valuable phytochemicals in them.

HPLC identification of flavonoid and phenolic compounds from *Diospyros sylvatica* leaf extracts

The sophisticated High Performance Liquid Chromatography technique has been employed to identify various flavonoid and phenolic compounds from different solvent extracts such as acqueous,ethylacetate and methanolic leaf extracts.

Eight Flavanoid compounds and five phenolic compounds were identified in the methanolic and aqueous leaf extracts.The flavonoid compounds include(i)Quercetin (ii) Quercetin--3-O-(glucosyl)galactocide (iii)Quercetin-3-O-rutinoside (iv)Quercedtin-3-O-ramnoside(v) Quercetin-3-O-galactoside (vii) Hispidulin -7-O-β-D-lucoronopyranoside (vii) Apigenin 7-O-β-D-glucopyranoside and (viii) Luteolin. Thedifferent phenolic compounds identified include (i) Myericetin (ii) Syringic acid (iii) 4-hydroxy benzoic acid (iv) (-) epigallocatechin and (v) Gallic acid.

The above compounds have been described by many investigators as possessing profound medicinal importance with active role in many biologicalactivities. Polyphenolic compound namely epigallocatechine found in wine extracts exhibited anticancer activity (Weisburg et al 2004). Gallic acid was found to exhibit anticancer, antiviral and antibacterial activities (Choi et al 2008). Many researchstudies revealed that diets high in quercetin content lower the rate of lung, breast,colon and stomach cancers.

Similarily myricetin and apigenin were also exhibitedanticancer activity (Nirmala & Ramanathan 2011). Quercetin was also known toprevent the incidence of coronary heart diseases by attenuating the expression ofmetalloproteinase-1 and interfering with accumulation of plaques in the artery walls (Garicia Lafuente et al 2009).

The Chinese famous herbal drug 'Naoxinqing (NXQ)' made from Diospyros kaki leaf extract which prevents cerebrovascular disease was found to containquercetin, quercetin-3-O-galactoside, quercetin-3-O-glucoside and 3,4-dihydroxybenzoic acid. The antioxidative protective role played by the above compounds wasascribed to the medicinal activity of NXQ (Magdy Kazg et al 2019).In the Diospyros lotus, Khaled Rashed et al (2013) reported the presence ofmyricetin, quercetin and gallic acid. They described the plant as a repertoire of beneficial phtochemicals. The Luteoline and apigenin-7-O-glucoside of Diospyros kaki were reported to have significant antioxidant and hepatoprotective activity (El-Hawary et al 2019). Yanhua Tian et al (2020) reported that myricetin was theprincipal antioxidant ingredient in the leaf of Diospyros lotus. Thus the flavonoid and phenolic compounds now identified in Diosyros sylvatica leaf extracts share similarity with chemical profiles of Diospyros kaki (Oriental persimmon) and Diospyros lotus(date-plum). Therefore, these compounds further underline the need to evaluate somebiological activities of Diospyros sylvatica plant extracts.

ANTIOXIDANT ACTIVITY EVALUATION OF *DIOSPYROS SYLVATICA* LEAF EXTRACTS

The antioxidant potential of plant is assessed through DPPH free radical scavenging assay method .Acqueous,ethyl acetate and methonolic solvent leaf t extracts of Diospyros sylvatica are evaluated for their DPPH free radical scavenging activity.

DPPH free radical inhibition of each extract concentration ranging from 2microgm/ml to 200microgm/ml was calculated by recording the absorbance reading of reaction at 517nm with an UV spectrophotometer.Free radical inhibition of leaf extracts was steadily increased with an increase in extract concentration from 2micogm/ml to 200 microgm/ml.

DPPH free radical scavenging activity:Concentration versusabsorbance of different solvent extracts of *Diospyros sylvatica*leaf.

S No	Concentration in µg/ml	Absorbanceobserved			
		Ascorbicacid	EthylAcetate	Methanol	Aqueous
1	2	0.924	0.975	0.962	0.968
2	5	0.906	0.969	0.941	0.954
3	10	0.841	0.925	0.894	0.909
4	25	0.749	0.895	0.806	0.851
5	50	0.512	0.806	0.692	0.792
6	75	0.334	0.713	0.506	0.682
7	100	0.176	0.638	0.318	0.513
8	150	0.095	0.524	0.125	0.388
9	200	0.034	0.413	0.076	0.165

DPPHfreeradicalinhibition(%)ofdifferentsolventextractsof*Diospyrossylvatica* leaf.

S No	Concentration in µg/ml	%DPPHInhibitionActivityobserved			
		Ascorbicacid	EthylAcetate	Methanol	Aqueous
1	2	4.84	--	0.93	0.31
2	5	6.69	0.21	3.09	1.75
3	10	13.39	4.74	7.93	6.38
4	25	22.86	7.83	16.99	12.36
5	50	47.27	16.99	28.73	18.43
6	75	65.60	26.57	47.89	29.76
7	100	81.87	34.29	67.25	47.17
8	150	90.22	46.04	87.13	60.04
9	200	96.50	57.47	92.17	83.01

Diospyros sylvatica Roxb. plant in Addateegala forest(East Godavari District)A.P State

CONCLUSION

The antioxidant effect of these extracts are compared with standard Ascorbic acid antioxidant.The Methanolic leaf extract of 200microgm/ml concentration manifested the highest percentage (92.17%)of free radical inhibition.This value is significantly high than standard Ascorbic acid.In this context ,there is growing demand for antioxidants from plants.

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