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Evaluation Of DPPH Free Radical Scavenging Activity Of Barleria Prionitis

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ABSTRACT:-

A comparison study of the antioxidative activities was conducted *in vitro* on the different extracts of Barleria Prionitis. Leaves were extracted by soxhlet extraction method with ethanol, methanol, and chloroform, respectively. For evaluation of antioxidant activity Diphenyl picryl hydrazyl (DPPH)method was used for these extracts. The results of antioxidative study of Barleria prionitis extracts from different solvents with reference to ascorbic acid presented different free radical scavenging activities: methanol>ethanol> chloroform. Maximum activity was shown by methanolic extract that is 278.04± 0.55.

Keywords :- Antioxidant activity, DPPH, free radical scavenging activities.

INTRODUCTION:-

Barleria prionitis is a shrub in the family Acanthaceae, native to Island and Mainland Southeast Asia, China, the Indian Subcontinent, the Arabian Peninsula and northeastern Africa. It is widely spread as an ornamental and weed, occurring in naturalized populations around the world. It used not only as an ornamental but also as a hedge and extensively as a component of folk medicines. As a weed it is regarded as problematic in many areas.

In indigenous system of medicine in India, the juice of B. prionitis leaves is used in stomach disorders, urinary affections, ulcer and fever. The leaf juice mixed with honey given to children in catarrhal affections and fever. Leaves are chewed to relieve from toothache. Some tribal communities are used leaves for the treatment of piles and reduce irritation. The leaf juice is applied externally in lacerated soles of feet and pimples.

The whole plant extract of B. prionitis was reported to show potent **antioxidant activity**. In vitro study showed that the ethanol and aqueous extracts of whole plant possess significant **antioxidant activity** against 1, 1-diphenyl-2-picrylhydrazyl (DPPH), 2, 2'-azino-bis (3-ethylbenzothiazoline-6-sulphonic acid (ABTS), **nitric oxide** and hydroxyl radical scavenging assay and Fe^{3+} reduction assay. In compare to

antioxidant potency, the ethanol extract was more potent than aqueous extract and its antioxidant potency showed sharp co-relation with the phenolic content of the extract. Amoo et al. (2011) reported that the **methanolic extract** of roots, leaves and stems showed significant antioxidant property. It was observed that the leaves showed higher degree antioxidant potential and high phenolic content in comparison to flower and stem. Some glycosides have been isolated from the aerial parts of B. prionitis namely barlerinoside, shanzhiside methyl ester, 6-O-trans-p-coumaroyl-8-O-acetylshanzhiside methyl ester, barlerin, acetylbarlerin, 7-methoxydiderroside and lupulinoside showed **antioxidant activity**. Among the isolated glycosides, only barlerinoside showed higher potential of antioxidant property with an IC_{50} value of 0.41 mg mL^{-1}.

2) MATERIALS AND METHODS:-

In the present study the plant B.Prionitis was collected in the early hours of morning from around, Arogya Kendra, Bhopal, India. Preparation of different extracts of the leaves of B.Prionitis is done by successively using a soxhlet apparatus using various solvents. The extract was concentrated under a vacuum and preserved in a refrigerator for further details.

Extraction and analysis:-Extraction was carried out in different solvents such as petroleum ether, chloroform, and Ethanol at 60^{o}C for 8 hours using the soxhlet extractor. After extraction, the extracts were dried at room temperature until the extract acquires the solid form. Different organic solvents extracts of Barleria prionitis were used to screen the following phytochemicals like sterol, reducing sugar, alkaloids, phenolic compounds, flavonoids, tannins, saponins, amino acids, glycosides. Phytochemical tests for analysis of phytoconstituents were carried out in extracts using the standard procedures as described by Sofowara (1993), Trease and Evans (1989), and Harborne (1973). The various extracts of B.Prionitis were subjected to phytochemical tests to screen the following chemicals. The phytochemical analysis was conducted using the test developed by Kapoor et al. (2013) and the presence of different phytochemicals in the extract were listed in the table, which would further be used for quantitative investigations. The Antioxidant activity of plant extract was carried out in different solvents [9].

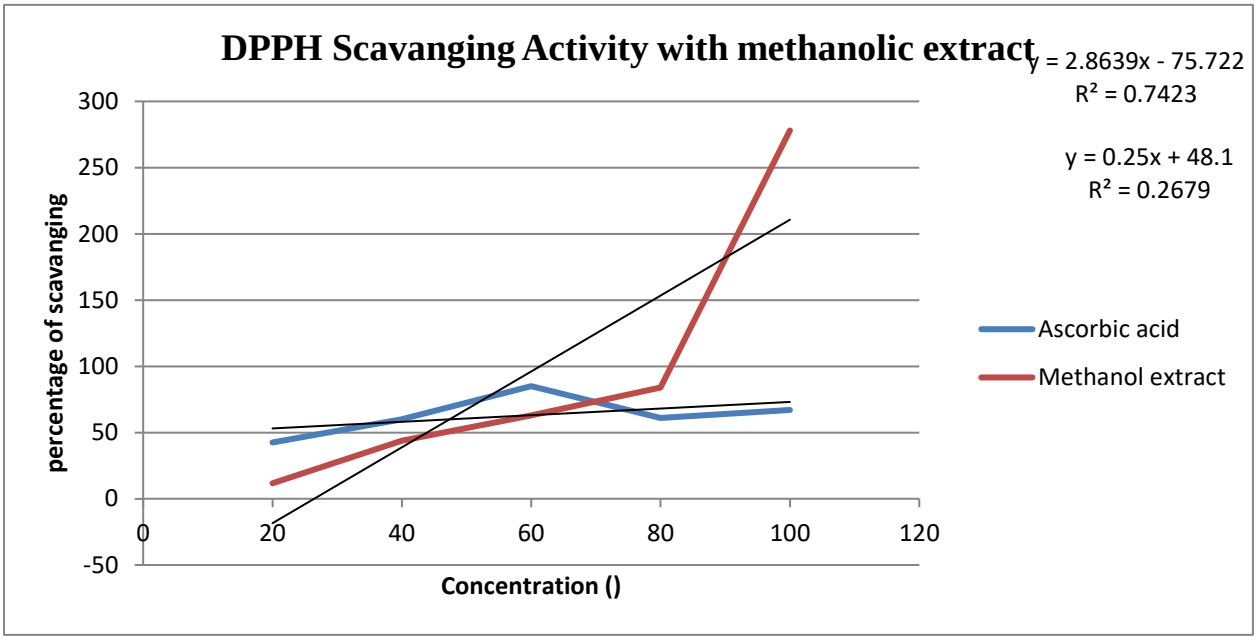
The free-radical scavenging activities of these compounds were tested by their ability to bleach the stable radical DPPH. The antioxidant activity using the DPPH (1, 1-diphenyl-2-Picrylhydrazyl) assay was assessed by this method (Benzie et al., 1996). The sample extracts and standards (BHA and ascorbic acid) were prepared at various concentrations (200-1000 ppm) and mixed with ethanolic solution of DPPH with a concentration of 0.04 mg/ml. After stand for 20 min in the dark, the mixtures were measured at 517 nm against ethanol as blank using UV-Vis Spectrophotometer and same procedure were done with Extract.

Results and Discussions:-

Table.1: DPPH Scavenging Activity of methanol extract:

S. No.	Concentration(µg/ml)	Ascorbic acid	Methanol extract

1.	20	42.5± 0.44	11.70± 0.12
2.	40	60± 0.49	43.90± 0.06
3.	60	85± 0.76	62.92± 0.08
4.	80	61± 0.67	84± 0.09
5.	100	670.60	278.04± 0.55

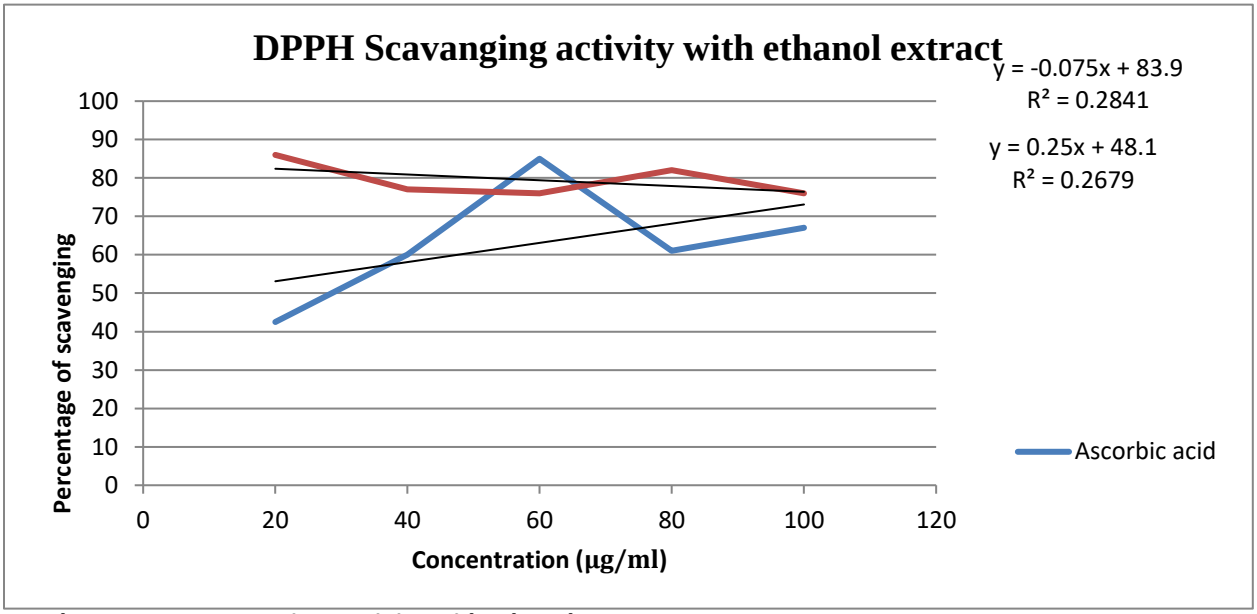


Graph.1: DPPH Scavenging Activity with methanol extract

Table.2: DPPH Scavenging Activity of ethanol extract:

S. No.	Concentration(µg/ml)	Ascorbic acid	Ethanol extract
1.	20	42.5± 0.69	86± 0.69
2.	40	60± 0.43	77± 0.43
3.	60	85± 0.72	76± 0.72
4.	80	61± 7.0	82± 7.0

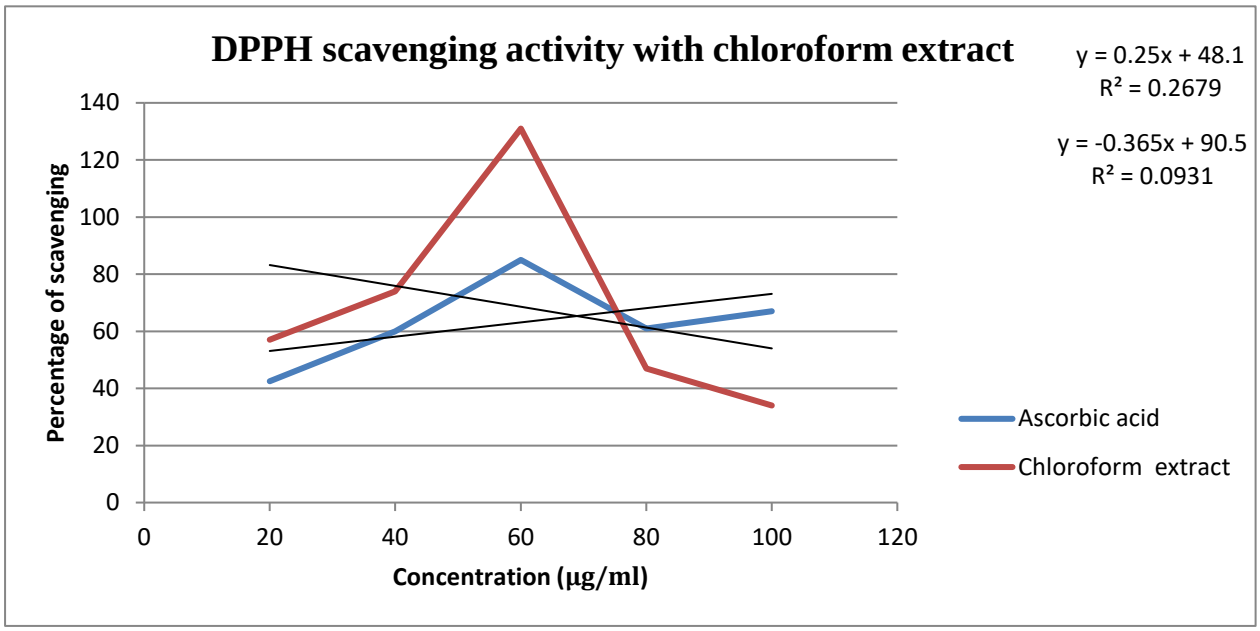
5.	100	67± 0.71	76± 0.71



Graph.2: DPPH Scavenging Activity with ethanol extract

Table.3: DPPH Scavenging Activity of chloroform extract:

S. No.	Concentration(µg/ml)	Ascorbic acid	Chloroform extract
1.	20	42.5± 0.09	57± 0.40
2.	40	60± 0.10	74± 0.75
3.	60	85± 0.07	131± 0.40
4.	80	61± 0.15	47± 0.10
5.	100	67± 0.16	34± 0.09



Graph.3: DPPH scavenging activity with chloroform extract

CONCLUSION:-

The Barleria prionitis is most commonly used as a medicinal purpose in India. In the present work we have been trying to establish the DPPH scavenging activity assay and antioxidant activity in three different extracts of leaves of Barleria prionitis that is ethanol, methanol and chloroform extract. From these results we understand that the DPPH scavenging activity of methanol plant extract give highest value than ethanolic and chloroform extract. This can be helpful in establishing its therapeutic values.

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