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Comparative Study on Antioxidant Activity in SidaAcuta Plant

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ABSTRACT: Sida Acuta is a medicinal plant. It is widely distributed in the pantropical area and considered a weed in some areas. Sida Acuta is a flowering plant that belongs to the mallow family Malvaceae. Sida Acuta has a high flavonoid content and potent antioxidant content. In many countries, the part of Sida *Acuta* was used to treat some health problems Urinary disease, Blood disorders, Wounds, Heart disease, Tuberculosis, Asthma, Toothache, Rheumatic infections, Cold cough, Respiratory disease, Spermatorrhea, Azoospermia, Oligospermia, Sciatica, Leucorrhea, and Snakebites. The plant is small erect, branched, fibrous, flattened at exceedingly almost ligneous at times. The plant was often found in wasteland, cultivated land, forest, grows efficiently in many soil and clay. This paper compares the recent study of antioxidant activity in SidaAcuta.

KEY WORDS: SidaAcuta, Antioxidant, Active Pharmaceutical

I. INTRODUCTION

This study helps to compare the resemblance and differences of more occurrences with pertinent reason. sida *A*cuta is traditional medicine and it is one of the main plants which is used in kabasurakudineer. This plant is available in the hotter part of India, Madras, Kerala, Deccan, chiefly Bombay and grows gregariously. This comparative study helps to know the medicinal benefits of sidaAcuta and also includes the parts of plants because every part of a plant has some medicinal benefits. Normally, Phytochemicals are produced by plants to help them resist the virus, bacteria, fungi, and also consumption of insects. Some phytochemicals have been used as poison and as traditional medicine. The part of sidaAcuta was extracted, then phytochemical analysis was done, which is used to analyze the phytochemical constituent in sidaAcuta. GC-MS is a widely used technique, which is used to analyze the phytochemicals, enzymes, polysaccharides, and unknown compounds. The compound that is found in GC-MS analysis isterpenes, heterocyclic aromatic compound, phenols, vitamins, sesquiterpenoids, ACalkaloids, cryptolepine, and quindoline. This phytochemical is analyzed for its medicinal properties. Present studies help to determine and compare the antioxidant activity of various extract (methanol, ethanol, chloroform, extract quality when compared to other extracts. These all are done for people to prevent several diseases. Many scientists and researchers worked on antioxidant activity in sidaAcuta to know the phytochemical constituent and to prevent some diseases.

II. LITERATURE SURVEY

M.D. Subramanya, et.al (2015) Total polyphenolic contents and in vitro antioxidant properties of eight sida species from Western Ghats, India. This study is to match and evaluate the polyphenol content and antioxidant properties of eight selected Sida species from Western Ghats. Methanolic root extract of S.acuta ,S.codifolia, S.indica, S.cordata, S. mysorensis, S.rombofolia, S.retusa,S.spinosa were analyzed. SidaCordifolia has the highest(total phenolic content 2.13±0.11mg tannic acid equivalent/g and TPC: 1.92±0.13mg caffeic acid equivalent/g).(Total flavonoid content TF:2.60±0.13mg quercetin equivalent/g) and also have highest antioxidant activity in Reducing antioxidant power assays TEAC: 590.67±29.53µm, (Ascorbic acid equivalent Antioxidant capacity:600.67±30.03µm),(2,2-Diphenylpicrylhydrazyl DPPH) (Radical scavenging 51.31±2.57% Radical scavenging activity RSA); (Trolox equivalent antioxidant capacity:566.25±28.31µm; AEAC:477.80±23.89µm). DPPH and Ferric Reducing Antioxidant Power (FRAP)(activity,2,2-Azinobis 3-ethyl benzo thiazoline-6 sulfonic acid) ABTS antioxidant activity was highest in s.indica TEAC:878.44±43.92µm; AEAC:968.44±48.42µm. All the antioxidant activities analyzed were above TEAC

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and important to note the values of (AEAC µm). The high phenolic content within the root extract eight Sida species has a positive correlation with their antioxidant properties. It revealed that the root of S.cordifolia can be considered as the potential source of polyphenols and antioxidants. In this study, the methanolic extract of SidaAcuta has low activity.

Fig 1: Photograph of SidaAcuta plant. Common name: Wireweedkurumthotti; Family: Malvaceace; Kingdom: Plantae; Order: Malvales; Genus: Sida; Species :Acuta; Division: Beudiocots; Class: Angiosperms

Mahesh Thandawada et.al (2016) In and in vivo evaluation of sidaacutaburm f (malvaceae) for its antioxidant anti-cancer activity. This paper was designed to evaluate the various extract of SidaAcutaBurm f. In vitro and In vivo. In vitro, for its Radical scavenging assay, cytotoxicity short term and long in vivo Anti-cancer activity. The petroleum ether, toluene, chloroform, acetone, ethyl acetate, and hydroalcoholic extract of the whole plant were evaluated for their Anti-cancer activity through DPPH assay. MTT and SRB for cytotoxicity, HEP-2, A- 549, and cell lines followed by short-term toxicity studies on Ehrlich Ascites Carcinoma (EAC)cells and Dalton's Lymphoma Ascites (DLA). The result showed the crucial decrease of the viability of cells in a concentration-dependent manner. According to IC50 obtained, the toluene and chloroform extract of S.acuta shows significant Antiproliferative activity which has further been evaluated in vivo. The result divulges a dose-dependent increase in lifetime and means survival time in the animals treated with toluene and chloroform extracts. However, the 200mg/kg dose level showed significant improvement when treated with animals. In conclusion, the chloroform and toluene extract of SidaAcutaBurm f possesses significant Anti-cancer potential and has to be further evaluated by isolating key phytochemicals and investigating the proteins that play a major role in this activity.

AmiraArciniegas, et. al (2016) Anti-hyperglycemia, antioxidant and anti-inflammatory activities of extracts and metabolites from sidaacuta and sidarhombifoli. Sida is used around the world for a large number of Therapeutic treatments, hyperglycemia, a-glucoside inhibitors are recognized as valuable tools for reducing postprandial hyperglycemia by decelerating absorption of glucose. Hexane, Acetone, Methanol extract of dried and ground aerial parts of S. Acuta and S.rhombifolia were subjected to analysis of anti-hyperglycemia, antioxidant, and anti-inflammatory activity. The inhibition of a-glucoside as primary screening the effect of extract and isolated compounds of S.acuta and S.rhombifolia anti-hyperglycemic activity was tested using yeast mammalian. It shows good results in acetone extract. S.acuta and S.rhombifolia showed IC50 values of 8.49± 0.66 and 8.10±0.34±µg ml-1, and the most active compound was p-hydroxyphenyl trans-ferulate (IC5019.24±1.73µ mol L-1) followed by β-Sitosterylglucopyranoside (IC50 32.70±1.35µ mol L-1). However, when mammalian a-glycoside has used the activity of extract and isolated compounds decreased significantly that indicates that substrate affinity is higher for type 1 enzyme. The anti-inflammatory and antioxidant activity of extracts and isolates were also tested. Over a span, many diabetic complications are coupled to oxidative stress and inflammatory immune response. The Acetone extract of aerial parts is most active in all evaluations. Since it was active in three evaluations, the trans-ferulate, p-Hydroxyphenethyl could be associated with these activities.

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Krishnaveni A et. al (2018) Preliminary phytochemical screening and in vitro antioxidant activity of sidaacutaburm. This test revealed phytochemical analysis and antioxidant effect in the Sida Acuta plant. The hydro-alcoholic extract of leaf was subjected to quantitative analysis to detect the presence of screening of secondary metabolites and evaluate for its antioxidant studies by in-vitro methods such as hydrogen peroxide scavenging assay reducing power assay, and total antioxidant capacity. The phytochemical analysis indicates the presence of carbohydrates, sterols saponins, flavonoids, proteins, alkaloids, cardio glycoside, resins, terpenoids, and amino acids, gum mucilage, coumarin, and quinine. In antioxidant studies the inhibitory concentration (IC30) of Sida Acuta of hydrogen peroxide scavenging effect results to be 1.83µg /ml in comparison with ascorbic acid (0.95µg /ml). The Inhibitory concentration (IC50) of Sida Acuta for reducing power effect results to be 142µ /ml in comparison with ascorbic acid 15µg /ml and Inhibitory concentration (IC50) of Sida Acuta antioxidant capacity results to be 185µg /ml. This paper reveals that the Sida Acuta plant showed a mild antioxidant effect.

Perumalswamy Muneeswari et.al (2019) Identification of active pharmaceuticals of sidaacutaburm.f leaves using GC-MS and HPTLC fingerprinting. This paper indicates the amplified scope of Sida Acuta leaf extract in the development of novel therapeutic agents capable of countering existing diseases stimulated by oxidative damage. Sida Acuta is one of the medicinal plants used for the treatment of many diseases. The ethanolic extract of leaves was used for phytochemical analysis, in this quantification of phytochemicals, in-vitro free radicals scavenging activity, enzymatic and non-enzymatic antioxidant levels in fresh leaves, HPTLC fingerprinting, and GC-MS analysis in ethanolic extract of sida Acuta leaves were done. The in-vitro antioxidant activity was analyzed using DPPH, ABTS, nitric acid, hydroxyl radical, and ferric ions, then ascorbic acid is used as a standard. The HPTLC results in the presence of flavonoids, tannins, phenols, and alkaloids in a good amount. The tested antioxidants were present eminently in leaves, especially catalase and glutathione peroxide, which may be a responsibly eminently radical scavenging assay of the extract against the tested free radicals. In GC-MS analysis it results in the presence of 35 different compounds that belong to different classes such as steroids, flavonoids, terpenes, phenols, fatty acid, heterocyclic aromatic compounds, vitamins, sesquiterpenoids, and alkaloids. The results indicate that the ethanolic extract of Sida Acuta leaves has effective than other extracts. These leaves have an effective scavenger of free radicals and have the potential to be used as a natural antioxidant, which is ascribable to the rich presence of its secondary metabolites.

III. CONCLUSION

Sidaacuta exhibits a various pharmacological activities such as Antioxidant, Antibacterial, Anti-inflammatory, Anticancer and Anti-Hyperglycemia,etc. It is used to cure many diseases and used as traditional medicine.s.acuta has basic approaches and applied research should be taken towards pharmaceutical products. This comparative study concluded that PerumalswamyMuneeswari et.al (2019) identification of active pharmaceuticals of sidaacutaburm.f leaves using GC-MS and HPTLC the one that is highly effective as far as its antioxidant capacity is concerned. It emphasizes that the ethanolic extract of sidaacuta leaves has more effect when compared to others and it is an effective scavenger of free radicals and has the potential to be used as a natural antioxidant. The GC-MS results showed the presence of 35 compounds that belonged to a bunch of different classes.

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