

**EVALUATING THE ANTIOXIDANT ACTIVITY OF *SACCHARUM SPONTANEUM* LINN
EXTRACT: AN *IN VITRO* STUDY****Srimathi V.^{1*}, Ruth V.², Adithya V.³, Shanmuga Deepika V.⁴, Dr. Padma R.⁵**^{1,2,3,4} Undergraduate Research Scholar, GRD College of Pharmacy, Thiruvallur, Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai.⁵HOD, Dept. of Pharmacognosy, GRD College of Pharmacy, Thiruvallur, Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai.***Corresponding Author: Srimathi V.**Undergraduate Research Scholar, GRD College of Pharmacy, Thiruvallur, Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai. DOI: <https://doi.org/10.5281/zenodo.23829930>**How to cite this Article:** Srimathi V.^{1*}, Ruth V.², Adithya V.³, Shanmuga Deepika V.⁴, Dr. Padma R.⁵ (2026). Evaluating The Antioxidant Activity Of *Saccharum Spontaneum* Linn Extract: An In Vitro Study. World Journal of Pharmaceutical and Medical Research, 12(11), 345–354.

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ABSTRACT

Saccharum spontaneum Linn., commonly known as wild sugarcane, is a traditionally used medicinal plant with potential pharmacological properties. The present study was undertaken to evaluate the in vitro antioxidant activity of *Saccharum spontaneum* Linn. extract using different free radical scavenging assays. The antioxidant potential of the extract was assessed by DPPH (2,2-diphenyl-1-picrylhydrazyl) free radical scavenging assay, nitric oxide radical scavenging assay, and hypochlorous acid scavenging assay. The ability of the extract to neutralize these reactive species was evaluated at different concentrations, and the scavenging activity was determined based on the reduction in radical formation. The extract demonstrated concentration-dependent antioxidant activity in the tested models, indicating its ability to scavenge free radicals and reactive oxidizing species. The observed antioxidant potential may be attributed to the presence of various phytoconstituents capable of donating hydrogen atoms or electrons. Overall, the findings suggest that *Saccharum spontaneum* Linn. possesses promising antioxidant activity and may serve as a potential source of natural antioxidant compounds.

KEYWORDS: *Saccharum spontaneum* Linn.; Antioxidant activity; DPPH; Nitric oxide; Hypochlorous acid.**INTRODUCTION**

Plants are essential for the survival of humans and animals, representing a key element of biodiversity. They contribute significantly to ecological balance and environmental stability, having been a source of food, shelter, and medicine for humans since ancient times. The use of medicinal plants as therapeutic agents has long supported traditional medicine systems, such as Ayurveda and Unani, which document numerous crude drugs for disease management. Natural products from higher plants remain a leading source of modern pharmaceuticals, with about 80% of the global population relying on traditional herbal medicine for primary health care. Medicinal plants contain various chemical substances classified into primary metabolites (like carbohydrates and proteins) essential for growth, and secondary metabolites (including alkaloids, flavonoids, and terpenoids), which drive pharmacological activities. These secondary metabolites showcase properties such as antimicrobial, anti-

inflammatory, antioxidant, and anticancer effects, establishing plants as valuable medicinal sources.^[1-3]

Plant-derived compounds demonstrate significant antimicrobial activity and have historically aided in treating infectious diseases. The diverse array of compounds found in plants offers vast potential for discovering novel therapeutic agents with enhanced safety and effectiveness. The integration of traditional medicine and medicinal plants is crucial for addressing primary healthcare needs, particularly in developing countries, thereby enhancing and supporting national healthcare systems.^[4, 5]

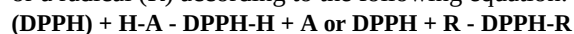
Ancient systems of medicine form the foundation of healthcare, especially in developing countries, where traditional medicine is vital for a large portion of the population. These systems, such as Ayurveda, Unani, and Siddha, emphasize the use of medicinal plants for disease treatment and health promotion, offering

affordable and accessible care. India is noted for its rich array of medicinal plants and traditional knowledge. Integrating traditional medicine within national health systems could improve healthcare accessibility and sustainability, especially in rural areas. As over 80% of people depend on traditional medicine, scientific validation of these practices is essential. Historically, ancient texts detail the therapeutic properties of various plant parts, contributing significantly to modern clinical drug development, with many contemporary drugs deriving from natural sources.^[7-9]

Antioxidants are chemical compounds that reduce lipid oxidation in food and prevent deterioration from oxygen exposure. They can be synthetic or natural substances, such as enzymes, vitamin E, and beta-carotene that inhibit oxidative reactions. In biological contexts, antioxidants bind to free radicals produced during oxygen use in cellular processes, particularly by mitochondria, preventing damage to lipids, proteins, carbohydrates, and nucleic acids. These free radicals, including reactive oxygen and nitrogen species, are a natural by-product of energy generation in cells.^[10]

A free radical is a chemical species with one or more unpaired electrons, making it less stable and reactive with other molecules. Radicals can interact with other radicals or non-radical molecules, forming covalent bonds. While non-radicals dominate in biological systems, reactive oxygen species (ROS) and reactive nitrogen species (RNS) can be generated by various processes, including UV radiation, metal-catalyzed reactions, inflammatory cell activation, and mitochondrial activity. ROS can be both beneficial and harmful, playing roles in cellular responses but causing oxidative stress at high concentrations. Oxidative stress refers to an imbalance between free radical production and elimination by antioxidants, leading to damage of biomolecules and cells, which has implications for diseases such as cancer, cardiovascular issues, and neurodegenerative disorders, as well as aging.^[11]

The DPPH assay method is a simple and rapid technique for evaluating antioxidant capacity in both solid and liquid food samples. It relies on the reaction of the stable DPPH free radical, which exhibits maximum absorption at 517 nm (purple). When antioxidants act as hydrogen donors, they reduce DPPH to its non-radical form, leading to a decrease in absorbance and a shift in color from purple to yellow. This method is widely accepted for assessing the free radical scavenging activity of potential drugs, highlighting the relationship between the extent of decolorization and the reducing ability of the antioxidants tested.^[13-15] In this test, a solution of radical is decolorized after reduction with an antioxidant (AH) or a radical (R) according to the following equation.



In vitro inhibition of nitric oxide radical is a measure of antioxidant activity of plant drugs. Nitric oxide is a free

radical which plays an important role in the pathogenesis of pain, inflammation, etc. Scavenging of nitric oxide radical is based on the generation of nitric oxide from sodium nitroprusside in buffered saline, which reacts with oxygen to produce nitrite ions that can be measured by using Griess reagent (Marcocci et al., 1994).^[16] The absorbance of the chromophore is measured at 546 nm in the presence of the fractions. All the extracts decreased the amount of nitrite generated from the decomposition of sodium nitroprusside *in vitro*. This may be due to the antioxidant principles in the extracts which compete with oxygen to react with NO· thereby inhibiting the generation of nitrite.

Hypochlorous acid (HOCl) scavenging activity is the ability of a chemical compound or extract to neutralize hypochlorous acid, a strong and potentially damaging oxidant produced by immune cells during inflammation. White blood cells (neutrophils) release an enzyme called myeloperoxidase, which creates HOCl to kill bacteria. Too much HOCl harms healthy tissues, inactivates protective proteins, and contributes to inflammatory diseases like atherosclerosis and asthma. Antioxidants—especially sulfur-containing compounds (like thiols) and certain dietary flavonoids—can safely absorb or react with HOCl to prevent this oxidative tissue damage. Common Scavenging Agents -- Sulfur Compounds: S-allylcysteine found in garlic and various thiol derivatives show high efficiency in neutralizing HOCl. Flavonoids: Plant pigments like eriodictyol and quercetin act as powerful HOCl quenchers via electrophilic substitution. Measurement tests often use probes like resorcinol or 5-thio-2-nitrobenzoic acid to track how well a test substance competes for and removes HOCl in a solution.^[17]

BOTANICAL PROFILE

Taxonomy and Nomenclature

Saccharum spontaneum is a grass species belonging to the family Poaceae. Its formal classification was established by Carl Linnaeus, and it is part of the genus *Saccharum*, which includes cultivated sugarcane. The binomial name *Saccharum spontaneum* L., published in 1771, has led to confusion due to its various synonyms in botanical literature, such as *Imperata spontanea* and *Saccharum chinense*. Its common names include Wild Sugarcane and Kans Grass, while in Sanskrit, it is referred to by names that highlight its characteristics, like Kasha and Kshugandha.^[18, 19]

Table 1: Vernacular Names and Synonyms of *Saccharum spontaneum*.^[20]

Scientific Name	<i>Saccharum spontaneum</i> L.
Botanically Similar Plants	<i>Imperata spontanea</i> , <i>Saccharum aegyptiacum</i> , <i>Saccharum canaliculatum</i>
Common English Names	Wild Sugarcane, Kans Grass, Thatch Grass, Tiger Grass
Vernacular Names	Kash, Kansh (Bengali); Kas, Kasa, Kaans (Hindi); Naanal, Peykkarumbu (Tamil); Kadu kabbu (Kannada); Nannana, Kusa (Malayalam); Talahib, Tigbau -Tagalog, Bisaya (Philippines); Tian gen zi cao (Chinese); Gelagah (Indonesian);

Morphology

Saccharum spontaneum is a robust, erect, perennial grass forming dense clumps. It has a deep, spreading rhizomatous root system contributing to its hardness. The slender, fibrous culms can reach heights of 1 to 4 meters, turning brown or black as they mature. Leaves

are long, linear-lanceolate with a prominent pale white midrib, serrated and prickly margins. Inflorescence features large, terminal, branching panicles (20-60 cm) with dense, feathery spikelet's and silky white hairs. The fruit is a tufted caryopsis, approximately 1.5 mm, aiding in wind dispersal.^[21]

**Fig 1: *Saccharum spontaneum* Linn.**^[22]**Geographical Distribution**

Saccharum spontaneum, native to the tropical and subtropical regions of the Old World, spans parts of Africa, Southern Europe, the Middle East, and Asia up to Northern Australia. Believed to have evolved in India's sub-Himalayan valleys, it exhibits remarkable ecological adaptability, thriving in moist habitats like riverbanks and marshes but also tolerating drier conditions in grasslands and deserts. This resilience enables it to colonize various soil types, including infertile alluvial and saline soils.^[23]

In certain areas, it is classified as an aggressive weed or invasive species due to the same persistence and quick, strong growth that make it a significant medical resource. It has expanded widely, outcompeting native flora and

creating thick, pure stands in places like the Panama Canal Watershed, especially in regions that have been cleared by floods or human activity. This dual character as an ecological challenge and a medicinal herb offers a special chance. Its rapid growth, low nutritional requirements, and high biomass production—the very traits that characterize its invasiveness—also make it a very sustainable and accessible raw material source. A bio-economic strategy, in which this invasive biomass is methodically and sustainably gathered for the manufacturing of phytopharmaceuticals, might be used in place of expensive eradication procedures. In line with contemporary ideas of sustainable development and ethnopharmacology, this would turn an ecological issue into a useful resource for healing.^[24]

RESEARCH METHODOLOGY

The following plant material was selected for the present study. *Saccharum spontaneum* Linn (Poaceae) – Whole plant. Folin-Ciocalteu reagent was obtained from Nice chemicals (P) Ltd., Manimala Road, Edapally, Kochi, Kerala, India – 682025.

Collection and Authentication of Plant Materials

The whole plant material of *Saccharum spontaneum* Linn (Poaceae) including with the flower heads were collected by uprooting from the wet lands of Thiruvallur, Tamil Nadu, India, in our college campus of GRD College of Pharmacy. The plants were collected in the months of September and October. The authenticated of the plant was done by Siddha Central Research Institute, Chennai, Tamil Nadu, Ministry of AYUSH government of India. The voucher specimens are preserved in our laboratory for further reference. The plant material collected which was around 5 kgs was washed thoroughly with tap water. The cleaned plant parts were then allowed for complete shade drying for 15 days, until all the water molecules evaporated and the plant gets dried well for grinding which was then powdered with a mechanical grinder. The powdered drug was passed through sieve number 40 to obtain uniform powder, and it was packed in airtight container, stored at room temperature for further studies.

Extraction of Plant Material

The dried powdered whole plant material of 20gm should be extracted successively with 150ml of different

solvents with increasing polarity starting with petroleum ether (60°-80°) then followed by hydro alcohol, and aqueous by maceration process for 72 hours at room temperature. The extracts would be filtered and concentrated at 45°C using rotary vacuum evaporator. The extracts obtained should be vacuum dried and stored in desiccators for further investigation of preliminary phytochemical analysis and antioxidant activity.

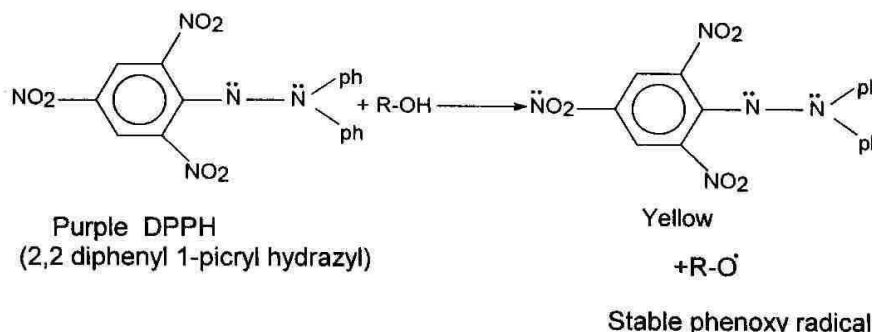
Determination of Physicochemical Constants

The physicochemical constants were determined by using standard procedures available in official monographs and research literatures. The results of these are presented in results and discussion section this article.

In vitro Antioxidant Studies

(a) DPPH Free Radical Scavenging Activity

The antioxidant activity of hydro alcoholic extract of the whole plant was assessed on the basis of the radical scavenging effect of the stable 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical. The DPPH free radical is reduced to a corresponding hydrazine when it reacts with a hydrogen donor. The DPPH radical is purple in colour and upon reaction with hydrogen donor, it changes to yellow in colour. It is a discoloration assay, which is evaluated by the addition of antioxidant to a DPPH solution in ethanol and the decrease in absorbance was measured.



Diphenyl picryl hydrazyl solution (DPPH, 100 μ M): 22 mg of DPPH was accurately weighed and dissolved in 100 ml of ethanol. From this stock solution, 18 ml was taken and diluted to 100 ml using ethanol to obtain 100 μ M DPPH solution. About 0.3 mM solution of DPPH in 100% ethanol was prepared and 1 ml of this solution was added to 3 ml of the extract dissolved in ethanol at different concentrations (25-400 μ g/ml). The mixture was shaken and allowed to stand at room temperature for 30 minutes and the absorbance was measured at 517 nm using a spectrophotometer. The percentage scavenging activity at different concentrations was determined and the IC₅₀ value of the extracts was compared with that of ascorbic acid, which was used as the standard.

(b) Nitric Oxide Radical Scavenging Activity

Sodium nitroprusside in aqueous solution at physiological pH, spontaneously generates nitric oxide, which interact with oxygen to produce nitrite ions, which can be measured by using a modified Griess-IIIosvoy method. Sodium nitroprusside spontaneously generates nitric oxide in aqueous solution. Nitric oxide generated in this manner was converted into nitric acid and nitrous acids in contact with dissolved oxygen and water. The liberated nitrous acid is estimated using Griess reagent, which forms a purple azodye in the presence of a test compound likely to be the scavenger and the amount of nitrous acid will decrease. The degree of decrease in the formation of purple azodye will reflect the extent of scavenging. This assay was performed according to the method described by Sreejayan, *et al.*^[25] Nitric oxide generated from sodium nitroprusside in aqueous solution

at physiological pH interacts with oxygen to produce nitrite ions, which was measured by Griess reagent. The reaction mixture (3 ml) containing 10 mM sodium nitroprusside in phosphate buffered saline, and the extract or the reference compound (curcumin) at different concentrations (50-800 µg/ml) were incubated at 25°C for 150 min. About 0.5 ml aliquot of the incubated sample was removed at 30 min intervals and 0.5 ml Griess reagent was added. The absorbance of the chromophore formed was measured at 546 nm. Inhibition of the nitric oxide generated was measured by comparing the absorbance values of control, extract and curcumin (25-400 µg/ml).

(c) Hypochlorous acid Scavenging Activity

Hypochlorous acid (HOCl) scavenging activity is commonly measured using the 5-thio-2-nitrobenzoic acid (TNB) assay. In this method, HOCl oxidizes yellow TNB to colorless DTNB. A test sample with scavenging capacity prevents this oxidation, allowing retention of sample color or absorbance proportional to its scavenging strength. Combine the buffer, the test sample

solution, and the TNB solution in a microplate well or cuvette. Add the HOCl solution to start the competitive oxidation reaction. Allow the mixture to react for a brief, fixed period (typically 5 to 10 minutes) at room temperature. Read the absorbance spectrophotometrically at 412 nm to determine the remaining yellow TNB concentration. Run a blank control (buffer and reagents without HOCl), a control without the test sample (maximum oxidation), and sample blanks. Determine the percentage inhibition of TNB oxidation using the decrease in absorbance relative to the control without the test scavenger. IC₅₀ Plot inhibition percentage against various sample concentrations to find the concentration providing 50% inhibition (IC₅₀) of HOCl-induced loss of TNB.^[26]

RESULTS AND DISCUSSIONS

Extraction of Plant Material

The yield of various extracts and their nature were given in Table 1.

Table 1: Yield and nature of extracts of *Saccharum spontaneum* Linn - whole plant

S. No.	Plant material	Quantity used for extraction in grams	Types of the extracts	Nature of the extracts	Yield	
					G	%
1	Whole plant of	150	Petroleum ether	Light green liquid	0.41	0.27
2	<i>Saccharum</i>	149	Hydro alcohol	Dark green liquid	4.90	3.29
3	<i>spontaneum</i>	134	Aqueous	Dark brown liquid	1.22	0.91

Determination of Physicochemical Constants

(a) Ash Value

The total ash value, water soluble ash value, acid insoluble ash value and sulphated ash values for *Saccharum spontaneum* Linn whole plant powder were found to be 6.6, 5, 4 and 4.5 %w/w respectively. The sulphated ash value and total ash value were found to be

high. The ash values of the plant powder are shown in Table - 2.

Ash values are helpful in determining the quality and purity of crude drugs in powdered form according to the standard procedure. Ash value of a drug gives an idea of the earthy matter, or the inorganic composition and other impurities present along with the drug.

Table 2: Ash values of raw powder of *Saccharum spontaneum* Linn - whole plant.

S. No.	Plant	Total ash (%w/w)	Water soluble ash (%w/w)	Acid insoluble ash (%w/w)	Sulphated ash (%w/w)
1	<i>Saccharum spontaneum</i> – Whole plant	6.6	5	4	4.5

(b) Extractives values

The whole plant powder of *Saccharum spontaneum* Linn. showed alcohol and water-soluble extractive values as 7 and 6.2 %w/w respectively which is given in Table - 3.

Extractive values are useful for evaluation of crude drugs and gives idea about the nature of chemical constituents present in them. The amount of extractive, a drug yield to a given solvent, is often an approximate measure of a certain constituent or group of related constituents the drug contains. In some cases, the amount of drug soluble

in each solvent is an index of its purity. Extractive values are primarily useful, for the determination of exhausted or adulterated drugs.

Table 3: Extractive values of raw powder of *Saccharum spontaneum* Linn - whole plant.

S. No.	Plant	Extractive value	
		Alcohol soluble Extractives (%w/w)	Water soluble Extractives (%w/w)
1	<i>Saccharum spontaneum</i> - Whole plant	7	6.2

(c) Moisture content

The moisture content of the whole plant of *Saccharum spontaneum* Linn is not too high (3 %w/w), thus it could be discouraging bacteria, fungi and yeast growth.

(d) pH of the extract

The results are presented in (Table - 4). Although petroleum ether extract was not much suitable because it is rich in lipid content. The pH is acidic.

Table 4: pH values of different extracts of the *Saccharum spontaneum* Linn- whole plant.

S. No	Extracts	pH
1	Petroleum ether	3.3
2	Hydro alcohol	3.6
3	Aqueous	4.2

Phytochemical Studies**(a) Organoleptic characters of *Saccharum spontaneum* Linn-- whole plant powder**

The whole plant powder of *Saccharum spontaneum* Linn -was pale yellow to light brown in colour with characteristic and faint odour but slightly sweet in taste. The powder was coarse in appearance and when

trituated with water it was non sticky in nature. The powder on shaking with water gives foam like froth and no oil stain was found when the powder was pressed between filter papers for 24 hours. A preliminary organoleptic character of the powdered plant material was studied and the results are shown in Table - 5.

Table 5: Organoleptic characters of raw powder of *Saccharum spontaneum* Linn – whole plant powder.

Powder character	
Colour	Pale yellow to light brown
Texture	Coarse powder
Odour	Characteristics, faint
Taste	Slightly sweet, Insipid
Powder triturated with water	Non sticky
Powder shaken with water	Foam like forth
Powder pressed between filter paper	No oil stains
Powder treated with 5% aqueous NaOH	Yellow
Powder treated with 60% aqueous H ₂ SO ₄	Pale yellow

(B) Qualitative Phytochemical Analysis

The qualitative phytochemical analysis of *Saccharum spontaneum* Linn, whole plant raw powder showed the presence of flavonoids, alkaloids, phenols, glycosides, saponins, terpenoids, steroids, starch, carbohydrates and tannins and wherein the petroleum ether extract showed the presence of phenol, steroids and saponins. In the case of hydro alcoholic extract it showed the presence of alkaloids, terpenoids, phenols, flavonoids, steroids,

tannins and carbohydrates. In the case of aqueous extract presence of alkaloids, terpenoids, phenols, flavonoids, steroids, tannins and carbohydrates were seen. The results of phytochemical test showed the presence of terpenoids, phenols, flavonoids and carbohydrates in all the extracts confirming the phytoconstituents to show an antioxidant activity. These details of the results are summarized in Table 6. Phytochemical evaluation helps in laying down the Pharmacopoeial standards.

Table 6: Qualitative phytochemical analysis of the raw powder and extracts of *Saccharum spontaneum* Linn - whole plant.

S. No	Constituents	Raw powder		Petroleum ether extract	Hydro alcohol extract	Aqueous extract
		Alc.	Aq			
1	Alkaloids	+	+	-	+	+
2	Glycosides	+	-	-	-	-
3	Terpenoids	+	+	-	+	+
4	Steroids	+	+	+	+	+
5	Flavonoids	+	+	-	+	+
6	Saponins	+	-	+	-	-
7	Tannins	+	+	-	+	+

8	Phenols	+	+	+	+	+
9	Resins	-	-	-	-	-
10	Proteins	-	-	-	-	-
11	Carbohydrate	+	+	-	+	+
12	Starch	+	+	-	-	-
13	Gum	-	-	-	-	-
14	Fixed oils	-	-	-	-	-
15	Mucilages	-	-	-	-	-

Pharmacological Studies

In Vitro Antioxidant Studies

Free radicals are known to play a definite role in a wide variety of pathological manifestations. Antioxidants fight free radicals and protect us from various diseases. They exert their action either by scavenging the reactive oxygen species or protecting the antioxidant defense mechanisms.

(a) DPPH Free Radical Scavenging Activity

DPPH radical scavenging activity was investigated according to the method of Sreejayan and Rao^[25] briefly to a methanolic solution of DPPH (100 mM, 2.95 ml), 0.01, 0.05ml and 0.1 g/ ml of test compounds dissolved in methanol was added at different concentration. Equal amount of methanol was added to the control. Absorbance was recorded at 517 nm at regular intervals of 30 s for 5 min. Ascorbic acid was used as a standard. Percentage antioxidant activity of hydroalcoholic extract of *Saccharum spontaneum* was given in Table 7.

Table 7: Antioxidant activity of *Saccharum spontaneum* Linn- whole plant Hydroalcoholic extract - DPPH free radical scavenging activity.

Time (seconds)	0.1 g/mL	0.05 g/mL	0.01 g/mL
30	22.680	21.65	09.92
60	37.740	31.46	12.62
90	48.433	37.70	15.57
120	57.750	41.76	17.03
150	63.600	45.59	19.71
180	67.890	48.48	20.83
210	70.955	51.65	23.65
240	73.630	53.30	26.37
270	75.850	55.47	27.35
300	77.310	57.06	28.90
600	78.910	68.45	35.02
900	84.790	74.90	39.27
1200	85.580	78.69	40.90
1500	86.270	81.81	44.15

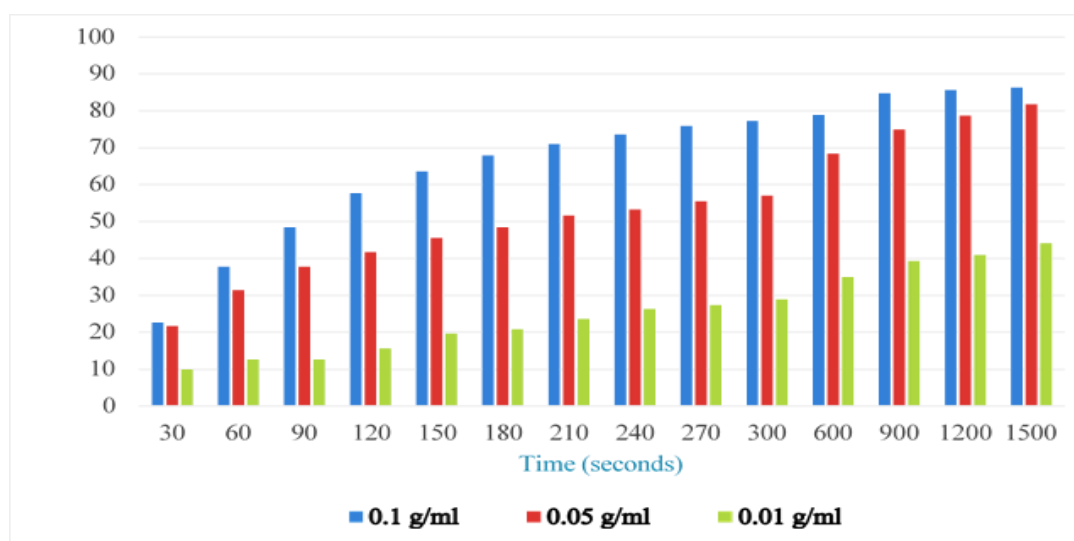


Fig. 2 Hydroalcoholic extract - DPPH free radical scavenging activity.

(b) Nitric Oxide Scavenging Activity

Nitric oxide scavenging activity was measured spectrophotometrically. Sodium nitro prusside (5 mM) in phosphate buffer saline was mixed with different concentrations of extract (2—10 mg/ml) dissolved in methanol and incubated at 25 °C for 30 min. After 30min, 1.5 ml of the incubated solution were removed and diluted with 1.5ml of Griess reagent (1% Sulphanilamide, 2% phosphoric acid, and 0.1% naphthyl

ethelene diamine dihydrochloride). The absorbance of the chromophore formed during diazotization of the nitrite with sulphanilamide and subsequent coupling with naphthyl ethelene diamine was measured at 546 nm along with a control. Ascorbic acid was used as a standard. Inhibitory Effect of Hydroalcoholic extract of *Saccharum spontaneum* on Nitric Oxide Radical was given in Table 8.

Table 8: Hydroalcoholic extract - Nitric oxide radical scavenging activity.

S. No.	Concentration (mg/mL)	% Nitric Oxide Scavenging Activity
1	2	2
2	4	5
3	6	14
4	8	21
5	10	28

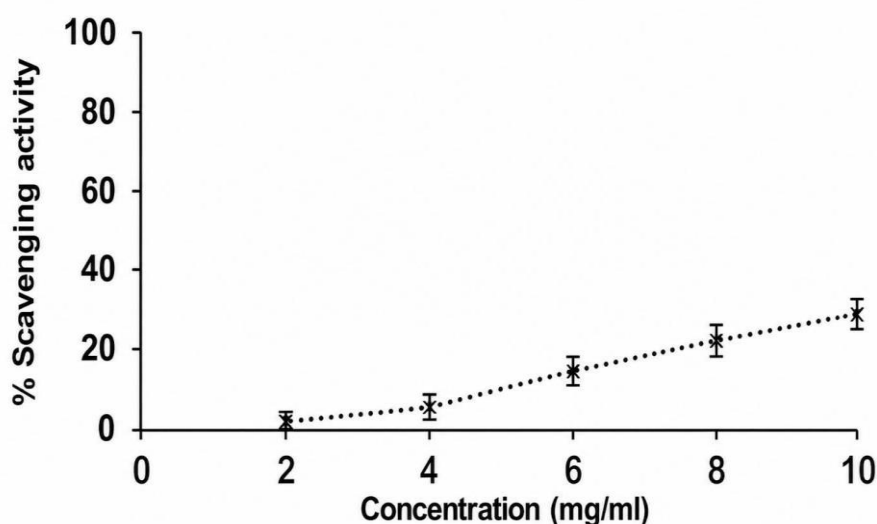


Fig. 3: Hydroalcoholic extract - Nitric oxide radical scavenging activity.

Hypochlorous Acid Scavenging Activity

For the assay, 75mM HOCl was prepared immediately before use by adjusting a solution of NaOCl to pH 6.2 with dilute sulphuric acid. The concentration of HOCl was further determined spectrophotometrically at 235nm

using the molar extinction coefficient of 100 M 1cm1.15. Effect of Hydroalcoholic Extract of *Saccharum spontaneum* on Oxidation of TNB by HOCl was given in Table 9.

Table 9: Hydroalcoholic extract - Hypochlorous acid scavenging activity.

S. No.	Concentration (mg/mL)	% Nitric Oxide Scavenging Activity
1	0.00	58
2	0.17	70
3	0.50	88
4	1.05	92
5	2.10	97

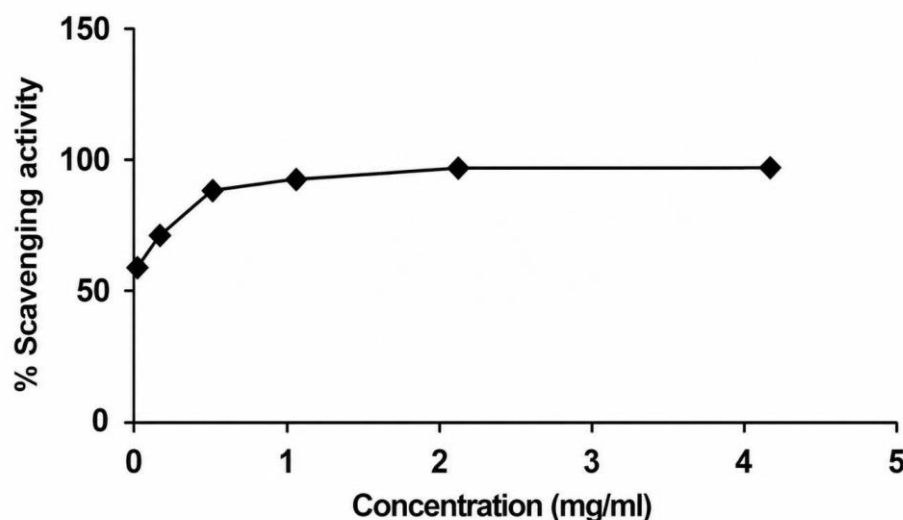


Fig. 4: Hydroalcoholic extract – Hypochlorous Acid Scavenging Activity.

CONCLUSION

The phytochemical studies of the raw powder and plant extracts showed the presence of flavonoids, terpenoids, phenols, alkaloids, glycosides, steroids, saponins, tannins, carbohydrates, and starch. These results gave us clues regarding the presence of some phytoconstituents in this plant. The *in vitro* screening for the evaluation of antioxidant activity of hydroalcoholic extract of the whole plant exhibited significant activity against the standard drug used. Hence in our study the hydroalcohol extract of the whole plant of *Saccharum spontaneum* Linn. Showed significant antioxidant with various methods which may be attributed to the presence of various flavone in this plant from the study carried out, it is evident that the plants are endowed with significant antioxidant activity against a standard drug, thereby justifying its use for their antioxidant activity in the traditional system of medicine. Finally, we would like to conclude that our present study throws immense light on our whole plant with reference to pharmacognostical, phytochemical and biological aspects enriching with new vistas.

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