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ORIGINAL ARTICLE **OPEN ACCESS**

Phytochemical Screening, GCMS Studies of *Amorphophallus paeoniifolius* (Dennst) Nicolson, and its Antimicrobial Activity

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ABSTRACT
Plants have been a vital source of medicine since ancient times. Various plant parts are highly medicinal due to the presence of bioactive compounds. The Elephant foot yam, Amorphophallus paeoniifolius. (Dennst.) Nicolson. It is a highly medicinal plant in which the tuber-mediated plant uses the leaf Part to evaluate the Phytochemicals (Flavonoids, Tannins, Phenols, Quinons, Protein, and Carbohydrates, etc) present with the non-polar solvent Petroleum ether and high-polar solvent Methanol, respectively. The various chemical components were estimated using GC-MS, the antibacterial activity was used to evaluate disease drug resistance against pathogens or contaminants, and the antioxidant activity was used to conclude free radical scavenging activity.
Keywords: *Antimicrobial, Antioxidant activity, Elephant foot yam, GC-MS, Phytochemicals Analysis.*

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INTRODUCTION

Amorphophallus paeoniifolius (Elephant foot yam), Family Araceae, is a perennial herb known as Suran or Jimikand (Hindi) (Figure 1). Genus Amorphophallus has more than 200 species worldwide (1) and 18 in India. The plant was identified using evidence shreds (2). The plant is cultivated for its edible tubers in many regions, for its potential therapeutic use (3). It is a crop of Southeast Asian origin in tropical and subtropical Asia. The genus Amorphophallus has been used as a food source and a traditional medicine for centuries (4). It grows in the wild in the Philippines, Malaysia, Indonesia, and other Southeast Asian countries. Herbs are the source of magnificent inhibitors that can act on various diseases (5). Most species are endemic (6). Northern mountain provinces of Vietnam contain glucomannan, a plant component with many health benefits, such as treatment for constipation, improvement of type 2 diabetes, and lowering of blood cholesterol and sugar (7). Despite great advances in modern scientific medicine, traditional medicine is still the primary form of treating diseases in the majority of people in developing countries, including India. Even among those to whom Western medicine is available, the number of people using one form or another of complementary or alternative medicine is rapidly increasing worldwide. Increasing knowledge of metabolic processes and the effect of plants on human physiology has enlarged the range of applications of medicinal plants (8). *A. paeoniifolius* tuber had analgesic, gastro-protective, anti-helminthic, and anti-bacterial activities (9,10). Especially in the concentration of antioxidant compounds such as flavonoids, triterpenoids, and polyphenols. These Bioactive compounds are important in preventing cancer, neurodegenerative diseases, cardiovascular diseases, and diabetes (11).

MATERIAL AND METHODS

Collection and Preparation of Plant Material:

The Collection of the Leaf part of *Amorphophallus paeoniifolius* is based on the Identification of the place of the specimen in Belagavi District, Jambooti village, Karnataka, India (Fig. 1). The collected leaf part was washed thoroughly with sterile distilled water, and then all Leaves were shade-dried and powdered using a Blender machine and used for further analysis.

Preparation of Plant Leaf Extract:
The fresh leaf was collected and washed with distilled water to remove the unwanted wastes on the surface of the leaves. The Leaves were placed in a shaded place for the proper drying process (moisture removal). The dried leaf material is blended with the help of a Blender machine. The Leaf powder weighed about 25 grams and was packed with the help of filter paper. Soxhlet extractor is used for further extraction process with temperatures about 50ºC for Petroleum ether and 60ºC for Methanol, having 250mL of solvent respectively. The Collected Crude extract is used for further analysis.

Phytochemical Analysis:

Test for flavonoids: To check the presence of flavonoids, 2 ml of each extract was taken and mixed with a few drops of 20% NaOH. This resulted in the formation of an intense yellow color. A few drops of 70% dilute HCl were added, resulting in the disappearance of the yellow color. The Formation and disappearance of yellow color indicate the presence of flavonoids in the extract.

Test for Saponins: To test for the presence of saponins, 2 mL of each extract was added to 6 mL of distilled water and shaken vigorously. The formation of bubbles or persistent foam indicates the presence of saponins.

Test for Tannins: 10% of alcoholic ferric chloride was added to 2 ml of the solvent extract. The formation of brownish blue or black color indicates the presence of tannins.

Test for Phenols: To 2 mL of each extract, 2 mL of 5% aqueous ferric chloride was added. The formation of a blue color indicates the presence of Phenols in the extract.

Test for Proteins: The presence of proteins was determined by adding 1 ml of 40% NaOH and a few drops of 1% copper sulfate to 2 ml of the extract. The Formation of a violet color indicates the presence of peptide linkage molecules in the extracts.

Test for Cardiac Glycosides: 1 ml of each extract was added to 0.5 ml of glacial acetic acid and 3 drops of 1% aqueous ferric chloride solution. The Formation of a brown ring at the interface indicates the presence of cardiac glycosides in the sample.

Test for Terpenoids: 1 ml of each solvent extract was taken with 0.5 ml of chloroform, followed by a few drops of concentrated sulphuric acid. The formation of a reddish-brown precipitate indicates the presence of terpenoids in the extract.

Test for Carbohydrates: 1 mL of Extract was added with a few drops of Molisch's reagent and then with 1 mL of concentrated sulphuric acid on the side of the tubes. The mixture was then allowed to stand for 2 to 3 minutes. The formation of a red or dull violet color indicates the presence of carbohydrates in the extract.

Test for Quinones: To check the presence of quinones, 1 ml of extract was added to concentrated Hydrochloric Acid. The Formation of yellow precipitate or Coloration indicates the presence of Quinones in the Extract. Otherwise, it suggests the absence of Quinones in the given extract.

Gas Chromatographic Mass Spectrophotometric (GC-MS) Method:
The analysis was conducted on a Shimadzu-GCMS-QP2010S fitted with a 30 m × 0.25 µm Rtx-5 ms capillary column. The oven temperature was programmed from 60 to 180ºC at 3º C/min and isothermally held for 15 min. HP-5 MS (5% phenylmethyl siloxane). Helium was used as carrier gas flow at 1.61 mL/min, and 1 µl of the sample was injected for analysis. The ion source was maintained at 180 – 250 °C and 70 eV electron energy. The methanol was added to the extracts before injecting 1µl into the column. The extracted name and molecular weight of unknown compounds were found by comparing their mass spectrum with the reference spectrum available in the Wiley GC/MS Library, Mass Finder Library, and Adams Library (13,14).

Ferric Reducing Antioxidant Power (FRAP) Assay:
The ferric-reducing capacity of extracts was investigated by using the potassium ferricyanide method. Briefly, 0.2mL of each of the extracts at different concentrations, 2.5mL of phosphate buffer (0.2 M, pH 6.6), and 2mL of potassium ferricyanide $K_3Fe(CN)_6$ (1%) were mixed and incubated at 50˚C for 300 min, to reduce ferricyanide into ferrocyanide. The reaction was stopped by adding 2.5 mL of 10% (w/v) trichloroacetic acid. Finally, 0.5 mL of $FeCl_3$ (0.1 %) and the absorbance was measured at 700 nm. The sample concentration absorbance (IC_{50}) was calculated by plotting the absorbance against the corresponding sample concentration. (12)

Preparation of Antibacterial Activity: (Kirby-Bauer disc diffusion method):
The disk diffusion method, or Kirby-Bauer disc diffusion method, is among the most flexible susceptibility testing methods for antibacterial agents that can be tested. The technique consists of placing paper disks saturated with antimicrobial agents on a lawn of bacteria seeded on the surface of Nutrient Agar (NA) medium incubating the plate overnight, and adding the three different concentrations of solvent extracts and control as likewise 0.5 µ, 1.0 µ, and 1.5 µ respectively and measuring the presence or absence of a zone of inhibition concentration around the disks.

RESULT AND DISCUSSION:

Phytochemical analysis:

The Qualitative phytochemical analysis of *A. paeoniifolius* Leaf extract showed that it was rich in phytoconstituents. It shows the presence of Flavonoids, Tannins, Cardiac Glycosides, Terpenoids, and Carbohydrates in the Methanol extract, and Flavonoids, Tannins, Cardiac Glycosides, and Carbohydrates present in Petroleum ether. (Table 1). the tuber part reported that the petroleum ether extract contains Alkaloids, Steroids, Flavonoids, and Carbohydrates respectively then the aqueous extract showed the presence of Flavonoids, Tannins, Protein, and Carbohydrates (15,) the qualitative and quantitative phytochemical analysis on *A. peaoniifolius* shows the presence of phenol, alkaloid, and glycosides and also saponins present in hexane extract. Also rich in Alkaloid content (7.60 ± 0.52 mg/g) in ethanol extract, total flavonoid rich in ethanol extract (18.03 ± 0.81 mg/g dry weight). A. peoniifolius shows the presence of alkaloids, glycosides, saponin glycosides, cardiac glycosides, tannin and phenolics, flavonoids, proteins, amino acids, steroids and triterpenoids, and carbohydrates (17).

Gas Chromatography-Mass Spectroscopy (GC-MS) Analysis:

The GC-MS analysis of *A. Peoniifolius* leaf methanol and petroleum ether extract showed Formamide, N, N-dimethyl, Hexadecanoic acid, methyl ester, n-hexadecanoic acid, 9(2,3 Diphenylcyclopropyl) methyl phenyl sulfoxide, trans, Triphenylphosphine oxide, Heptacosyl heptafluorobutyrate, 1-Hexacosanol, Campesterol, Stigmasterol, gamma.-Sitosterol presence in methanol extract. 2-Pyrrolidinone, 1-methyl, n-Hexadecanoic acid, Phytol, Heptatriacontane, Tetrapentacontane, Campesterol, Stigmasterol, gamma.-Sitosterol, present in petroleum ether extract respectively RT in min and area of percentage shows various chemical component listed in (Table 2 and 3), even the structure isolated through the GC MS library to make the entire deliberation in a comprehensive format (Fig 2 & 3). The *Amorphophallus campanulatus* shows the presence of compounds in ethanolic and aqueous extracts are 1-Nonadecene, 1-Octadecene, Tetradecane, 1-Undecene, 1- Hexadecene, Hexadecane, etc; saturated and unsaturated fatty acids and their esters like Tetradecanoic acid, Hexadecanoic acid and its methyl and ethyl esters, Pentadecanoic acid, Heptadecanoic acid, Octadecanoic acid, Dodecanoic acid, Linoleic acid and its ester, Oleic acid, Ethyl oleate, etc, and plant sterols like Stigmasterol, β-Sitosterol, Campesterol, Fucosterol, etc. Apart from these, the extracts are also rich sources of tocopherol, the common and most popular antioxidant vitamin. It is also worth mentioning that the basic difference between the ethanolic and aqueous extracts of *Amorphophallus campanulatus* lies in their polyphenols, flavonoids, and triterpene content. The ethanolic extract contains a greater variety of phenolic compounds like 1, 3, 5, 5-benzenetriol, dodecanol, Phenol, 2,4-bis(1,1-dimethyleth..., the flavonoid fraction 4H-Pyran-4-one, 2, 3-dihydro-3, 5-dihydroxy-6-methyl-, and the triterpene Squalene. These pharmacologically active compounds are present in higher amounts in the ethanolic extract than in aqueous extract (18).

Antioxidant activity by FRAP assay:

FRAP Assay of *A. paeoniifolius* Leaf powder was taken. The five concentrations were taken to evaluate the ferric reducing antioxidant power assay in Methanol extract, showing 3.57 ± 0.12, 13.83 ± 0.30, 26.87 ± 0.18, 35.06± 0.17, 42.23 ± 0.14, respectively, and the increasing rate of points results in the IC_{50} value. 280.30 µg ml. Petroleum ether extract showing 13.45 ± 0.20, 24.62 ± 0.25, 33.66 ± 0.15, 41.69 ± 0.15, and 51.01 ± 0.13 respectively, and the increasing rate of points results in the IC_{50} value 242.75 µg ml, graph (1), DPPH *invitro* antioxidant activity shows the concentration of Alcohol extract of *A. paeoniifolius* (402.01 4.32%) had a greater scavenging effect than water (310.42 ± 5.72%), ethyl acetate (253.83 ± 7.2%), chloroform (225.05 ± 5.67%), hexane (153.19 ± 2.33%), and ascorbic acid (295.35 ± 0.36%). (16). The five concentrations were taken to evaluate the ferric reducing antioxidant power assay in Methanol extract showing 3.57 ± 0.12, 13.83 ± 0.30, 26.87 ± 0.18, 35.06± 0.17, 42.23 ± 0.14 respectively, and the increasing rate of points results in the IC_{50} value. 280.30 µg ml. Petroleum ether extract showing 13.45 ± 0.20, 24.62 ± 0.25, 33.66 ± 0.15, 41.69 ± 0.15, and 51.01 ± 0.13 respectively, and the increasing rate of points results in the IC_{50} value 242.75 µg ml (Table 4). The extract at 50 µg/mL concentration had higher inhibitory activity of 68.6%. The IC_{50} value was observed to be 30 µg/mL. The results reveal that extracts contain powerful inhibitor compounds, which may act as primary antioxidants that react with free radicals. (20). The leaf of *A. peoniifolius* has some potential value in the field of pharmacology.

Antibacterial Activity:

The Antibacterial activity in various concentrations of 50 µl, 100 µl, and 150 µl and Amoxicillin as a control 100 µg/mL respectively, which the inhibition zone created after the incubation period of bacterial plates has recorded with respective Zone of Inhibition sensitivity of Methanol comes with 09 mm, 12 mm, and 15 mm respectively and Petroleum ether extract 07mm, 10mm, and 14mm (Table 5) hence The overall inhibition zone sensitivity reports resistance of the Leaf part of *A. paeoniifolius* against bacterial inoculum *S. aureus*. antibacterial activity resulting in various concentrations of 50 µl, 100 µl, and 150 µl and Amoxicillin as a control 100 µg/mL, with the inhibition zone created after the incubation period of bacterial

plates has recorded with respective Zone of Inhibition sensitivity of Methanol comes with 09 mm, 12 mm, and 15 mm respectively and Petroleum ether extract 07 mm, 10 mm, and 14 mm (Figure 4), Methanol and Hexane extracts showed good inhibitory activity against all the bacterial pathogens used for the study but aqueous extracts of both the species did not show inhibitory activity against any pathogen (19).

Table 1: Qualitative analysis of two different solvent extracts.

Serial Number	Tests	Plant leaf extract	
		Methanol extract	Pet Ether extract
1.	Flavonoids	+	+
2.	Saponins	-	-
3.	Tannins	+	+
4.	Phenols	-	-
5.	Proteins	-	-
6.	Cardiac Glycosides	+	+
7.	Terpenoids	+	-
8.	Carbohydrates	+	+
9.	Quinones	-	-

Note: + = Present, - = Absent

Table 2: GC MS Analysis of *A. peoniifolius* Methanol Leaf Extract.

Solvent	Sl No	RT (Min)	Name of the Compounds	Molecular Formula	Molecular Weight (g/mol)	Area (%)
Methanol extract	1	3.468	Formamide, N, N-dimethyl	C3H8N2O	88	15.38
	2	19.678	Hexadecanoic acid, methyl ester	C17H34O2	270	3.86
	3	20.153	n-Hexadecanoic acid	C16H32O2	256	4.00
	4	27.563	9(2,3Diphenylcyclopropyl)methyl phenyl sulfoxide, trans-	C22H20OS	332	14.40
	5	28.702	Triphenylphosphine oxide	C18H15OP	278	1.94
	6	34.201	Heptacosyl heptafluorobutyrate	C31H55FO2	592	1.70
	7	36.862	1-Hexacosanol	C26H54O	382	3.20
	8	38.309	Campesterol	C28H48O	400	3.20
	9	38.661	Stigmasterol	C29H48O	412	4.74
	10	39.517	gamma.-Sitosterol	C29H50O	414	8.56

Note: RT = Retention Time

Table 3: GC MS Analysis of *A. peoniifolius* Pet Ether Leaf Extract.

Solvent	Sl No.	RT (Min)	Name of the Compounds	Molecular Formula	Molecular Weight (g/mol)	Area (%)
Pet Ether extract	1	7.723	2-Pyrrolidinone, 1-methyl	C5H9NO	99	1.31
	2	20.189	n-Hexadecanoic acid	C16H32O2	256	4.52
	3	22.453	Phytol	C20H40O	296	1.95
	4	34.203	Heptatriacontane	C37H76	520	4.94
	5	36.824	Tetrapentacontane	C54H110	758	7.87
	6	38.307	Campesterol	C28H48O	400	12.07
	7	38.660	Stigmasterol	C29H48O	412	15.53
	8	39.517	gamma.-Sitosterol	C29H50O	414	23.96

Note: RT = Retention Time

Table 4: Antioxidant Activity (FRAP) Relative % of Reducing Power Assay.

Concentration (µg/ml)	Relative percentage of reducing power	
	Methanol	**Petroleum Ether**
50	3.57 ± 0.12	13.45 ± 0.20
100	13.83 ± 0.30	24.62 ± 0.25
150	26.87 ± 0.18	33.66 ± 0.15
200	35.06 ± 0.17	41.69 ± 0.15
250	42.23 ± 0.14	51.01 ± 0.13
IC_{50} Value (in µg/ml)	**280.30 µg/ml**	**242.75µg/ml**

Table 5: *A. paeoniifolius* Methanol and Pet Ether extracts Inhibition zone sensitivity against *S. aureus.*

Serial Number	Concentration (in µg/ml)	Measurement (in mm)	
		Methanol	Petroleum Ether
1.	50	9	7
2.	100	12	10
3.	150	15	14
Control	Amoxicillin (500mg)	20	

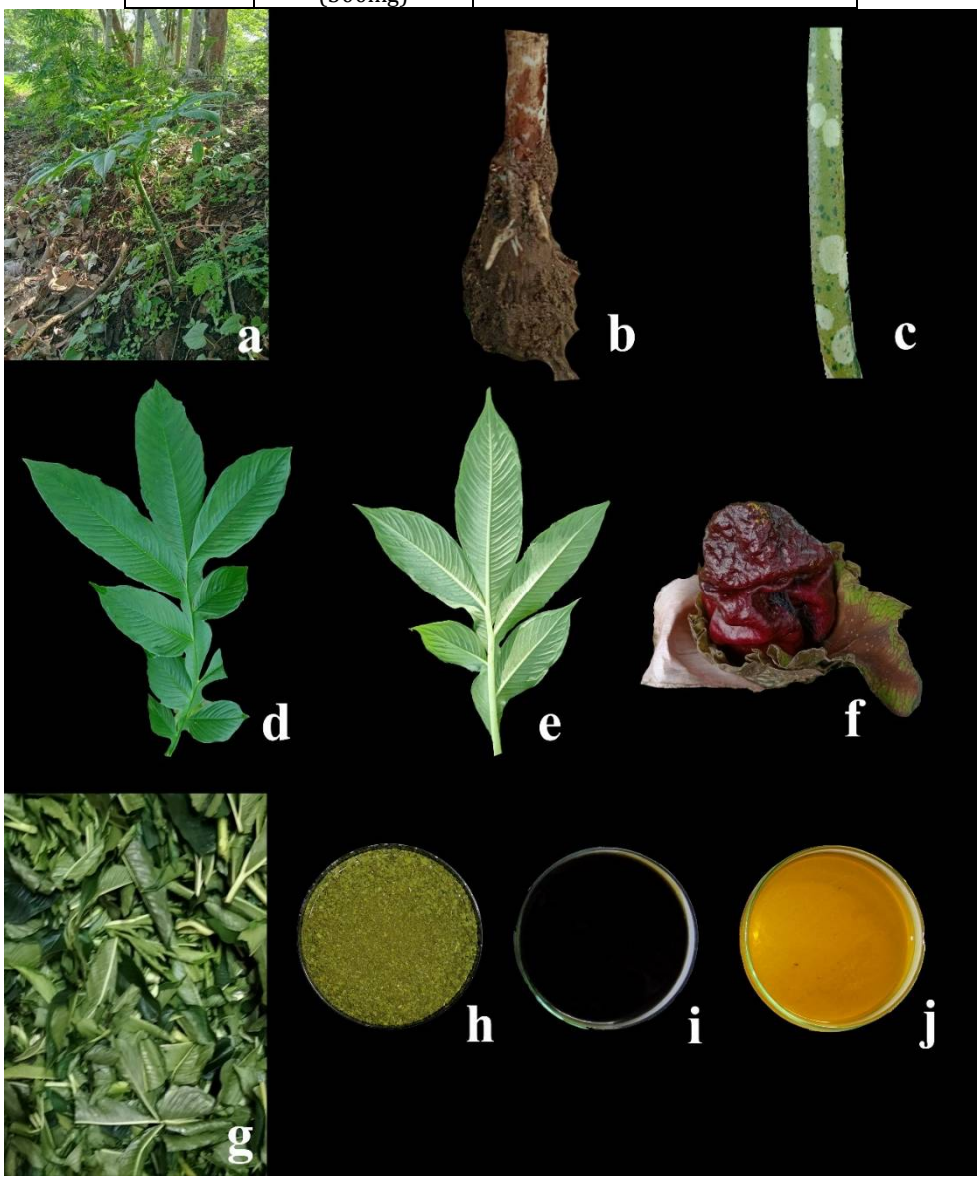
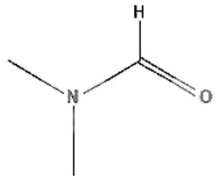
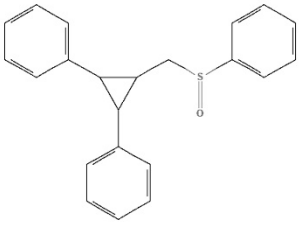


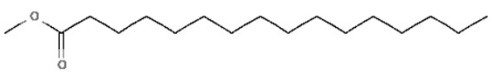
Figure 1: *Amorphophallus paeoniifolius* (Dennst.) Nicolson. a. Habit, **b.** Tuber **c.** Stem **d.** Leaf dorsal, **e.** Leaf ventral, **f.** Flower, **g.** Chopped Leaf, **h.** Fine Powder of Leaf, **i.** Methanol Extract, **j.** Petroleum Ether Extract.



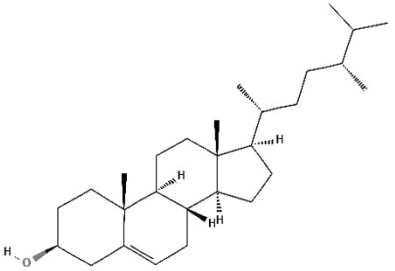
Formamide, N, N-dimethyl



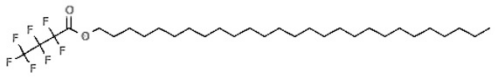
9(2,3Diphenylcyclopropyl)methyl phenyl sulfoxide, trans-



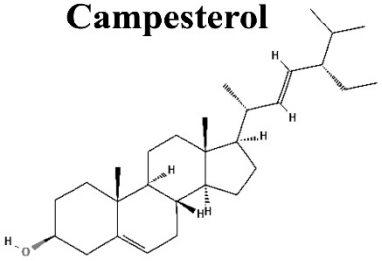
Hexadecanoic acid, methyl ester



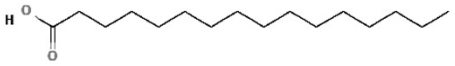
Campesterol



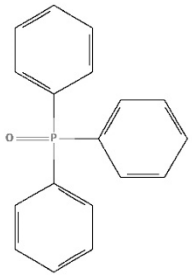
Heptacosyl heptafluorobutyrate



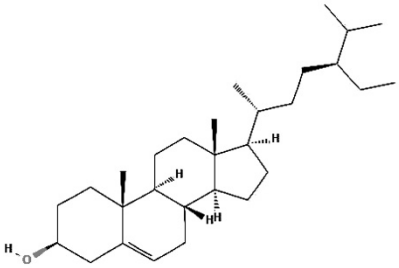
Stigmasterol



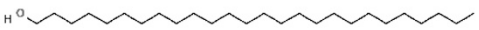
n-Hexadecanoic acid



Triphenylphosphine oxide



gamma.-Sitosterol



1-Hexacosanol

Figure 2: ***Amorphophallus paeoniifolius*** **GCMS Compound structures of Leaf part methanol extract.**

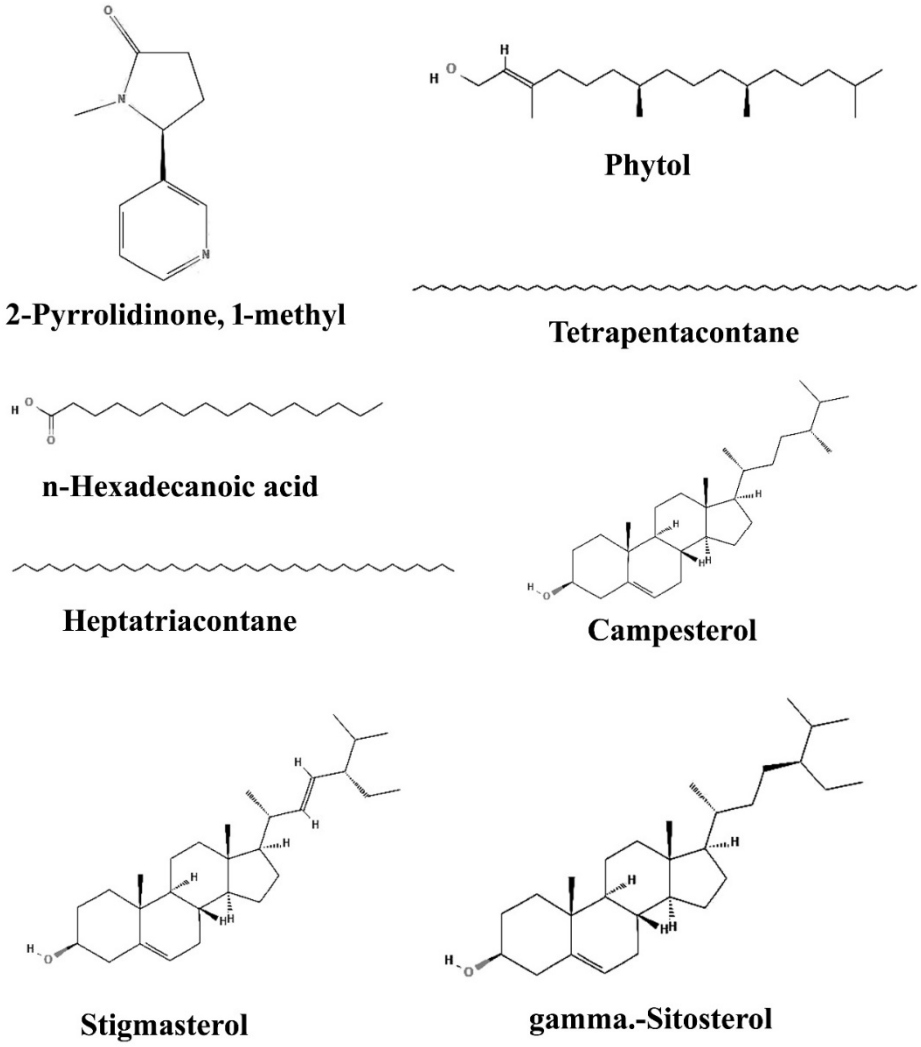
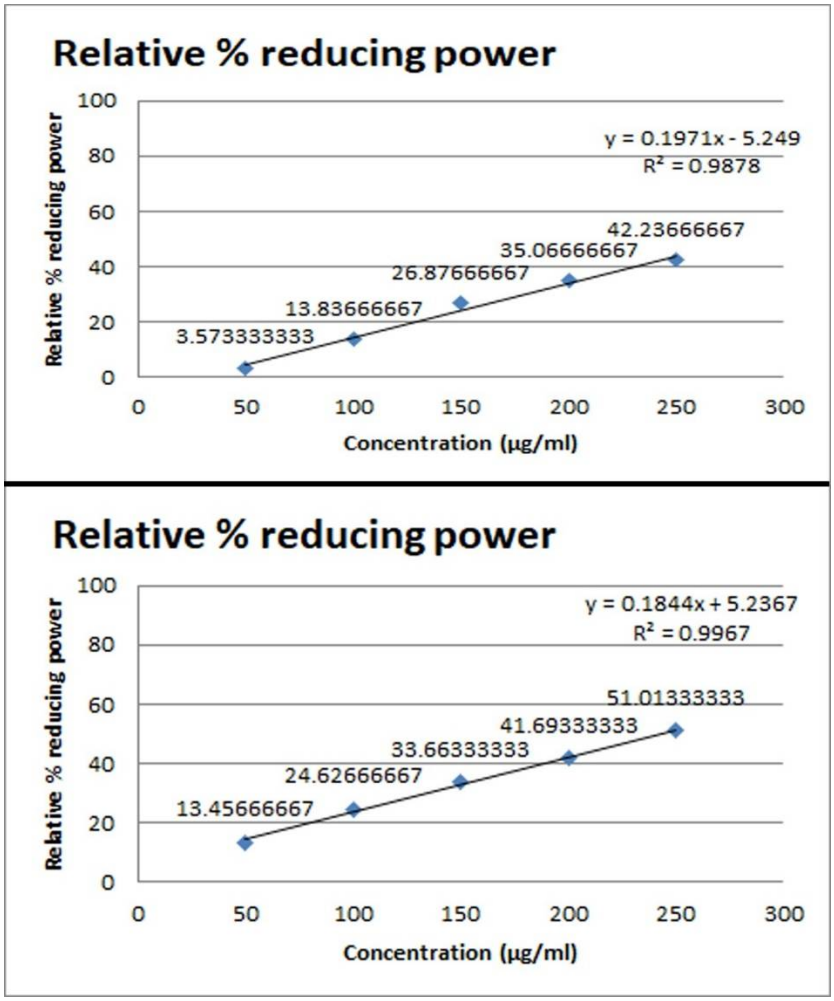
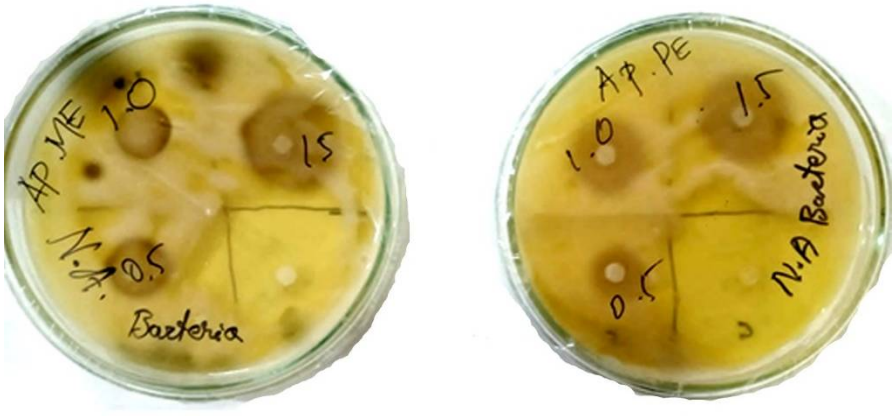


Figure 3: ***Amorphophallus paeoniifolius*** **GCMS Compound structures of Leaf part petroleum ether extract.**



Graph 1: ***Amorphophallus paeoniifolius*****. Antioxidant assay by FRAP method, the upper graph shows methanol extract & Lower graph shows petroleum ether relative percentage of reducing power.**

Figure 4: ***Amorphophallus paeoniifolius*** **Antibacterial activity shows inhibition zones a. Methanol Extract b. Petroleum Ether.**



a **b**

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REFERENCES

1. Sedayu, A., Eurlings, M. C., Gravendeel, B., & Hetterscheid, W. L. (2010). Morphological character evolution of *Amorphophallus* (Araceae) based on a combined phylogenetic analysis of TRNL, RBCL, and LEAFY second intron sequences. Botanical Studies, 51(4), 473-490.
2. Gamble, J. S. (1935). Flora of the Presidency of Madras. West, Newman & Co. and Adlard & Son, 1(1). 503..
3. Anuradha Singh, A. S., Srivastava, K. C., Anwesa Banerjee, A. B., & Neeraj Wadhwa, N. W. (2013). Phytochemical analysis of peel of *Amorphophallus paeoniifolius*. Int J Pharm Bio Sci . 4(3): (P) 810 - 81
4. Krishna, A. R., Singh, A., Jaleel, V. A., Raj, S., Karthikeyan, S., & Gothandam, K. M. (2013). Morphological, phytochemical, and anti-bacterial properties of wild and indigenous plant (*Amorphophallus commutatus)*. J. Med. Plants Res, 7(13), 744-748.
5. Kadali, V. N., Ramesh, T., Pola, S. R., & Sandeep, B. V. (2016). Assessment of antibacterial activity of *Amorphophallus paeoniifolius* tuber and its peel extracts. Trop Plant Res, 3(1), 172-175.
6. Madhurima, P., Kuppast, I. J., & Mankani, K. L. (2012). A rev Madhurima, P., Kuppast, I. J., & Mankani, K. L. (2012). A review on *Amorphophallus paeoniifolius*. Int. J. Adv. Sci. Res. Technol, 2, 25-30.
7. Van Tien, T., Van Huan, H., Quang, N. M., & Van Du, N. (2017). Research component and distribution of species *Amorphophallus* spp. with tubers containing glucomannan in the Northern Mountain provinces of Vietnam. Journal of forestry science and technology, (5), 118-125.
8. Dey, Y. N., Ota, S., Srikanth, N., Jamal, M., & Wanjari, M. (2012). A phytopharmacological review on an important medicinal plant-*Amorphophallus paeoniifolius*. AYU (An international quarterly journal of research in Ayurveda), 33(1), 27-32.
9. Van, H. T., Nguyen, H. H. M., Huynh, N. T. A., Le, V. S., & Tran, G. B. (2020). Chemical composition and antibacterial activities of the ethanol extracts from the leaves and tubers of *Amorphophallus pusillus*. Plant Science Today, 7(2), 296-301.
10. Van, T. H., Tran, B. N., Vo, T. T. N., Trinh, T. T., Nguyen, T. N., Van Le, S., & Tran, B. G. (2020). Antioxidant capacity and flavonoids, triterpenoids, polyphenol, and polysaccharide content from tubers of two Amorphophallus species (Araceae). Journal of Applied Biological Sciences, 14(1), 15-25.
11. Uddin, S. N., Akond, M. A., Mubassara, S., & Yesmin, M. N. (2008). Antioxidant and Antibacterial activities of Trema cannabina. Middle-East Journal of Scientific Research, 3(2), 105-108.
12. Benzie, I.F.F. and Strain, J.J. (1996). The ferric reducing ability of plasma (FRAP) as a measure of antioxidant power: The FRAP assay. Analytical Biochemistry, 239: 70–76.
13. McLafferty, F. W., Stauffer, D. B., Stenhagen, E., & Heller, S. R. (1989). The Wiley/NBS registry of mass spectral data.
14. Demirgan, R., Karagöz, A., Pekmez, M., Önay-Uçar, E., Artun, F.T., Gürer, Ç. and Mat, A., 2016. In vitro anticancer activity and cytotoxicity of some Papaver alkaloids on cancer and normal cell lines. African Journal of Traditional, Complementary and Alternative Medicines, 13(3), pp.22-26.
15. De, S., Dey, Y. N., & Ghosh, A. K. (2010). Phytochemical investigation and chromatographic evaluation of the different extracts of tuber of *Amorphophallus paeoniifolius* (Araceae). Int J Pharm Biol Res, 1(5), 150-7.
16. Bhuvaneswari, C., & Sivasubramanian, R. (2023). Phytochemical Analysis of *Amorphophallus paeoniifolius* (Dennst.) Nicolson and its Standardisation by HPLC and HPTLC. Oriental Journal of Chemistry, 39(1), 56.
17. Dey, Y. N., & Ghosh, A. K. (2010). Pharmacognostic evaluation and phytochemical analysis of the tuber of *Amorphophallus paeoniifolius*. Int J Pharm Res Dev, 2(9), 44-49.
18. Basu, S., Roychoudhury, U., Das, M., & Datta, G. (2013). GC-MS analysis identifies bioactive components in ethanolic and aqueous extracts of *Amorphophallus campanulatus* tuber. International Journal of Phytomedicine, 5(2), 243.
19. Salunke, C. A., & Satpute, R. A. (2018). Phytochemical analysis and in vitro antimicrobial activity of extracts from *Amorphophallus paeoniifolius* (Dennst.) Nicolson and *Amorphophallus commutatus* (Schott) Engl. Corms. Journal of Root Crops, 44(1), 55-60.
20. Angayarkanni, J., Ramkumar, K. M., Priyadharshini, U., & Ravendran, P. (2010). Antioxidant potential of *Amorphophallus paeoniifolius* about their phenolic content. Pharmaceutical Biology, 48(6), 659-665.

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