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PHARMACOLOGICAL AND ANTI CANCER ACTIVITY OF *Ipomoea sepiaria* METHANOLIC EXTRACT AGAINST PC-3 CELL LINE

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

A few conventional restorative plants contain in explored concerning their enemy of corpulence likely wellsprings of is *Ipomoea sepiaria* Koenig ex. Roxb. The medicine is supposed in tales game plan of prescription for various accommodating properties like, love elixir and arsenic hurting, tonic, re-establishing, diuretic, laxative, uterotonic and sterility in women and leaves is shown particularly in diabetes. Phytochemical screening of different concentrates of *Ipomoea sepiaria* exposed the presence and non-attendance of various phytochemicals are available in ethanol remove, further examinations were done with leaves of *Ipomoea sepiaria* ethanol separate. PC3 (PC-3) is a human prostate malignancy cell lines that are profoundly utilized in examining the biochemical changes prostatic disease cells. Explores on PC-3 human prostate malignancy cell lines control are required in the current many years. The anticancer action of fluid concentrate of *Ipomoea sepiaria* was researched by 3-(4,5-dimethylthiazol-2-yl)- 2, 5-diphenyltetrazolium (MTT) measure utilizing PC-3 cell line. The current experimentation was indicated that watery concentrate of *Ipomoea sepiaria*, when exposed to various focuses on PC-3 cells demonstrated IC50 cell hindrance at about 5µM for 48 hours and about 2 µM for 72 hours. The information made by this particular examination gives relevant pharmacognostic and phytochemical data needed for proper distinctive confirmation and check of leaves of this particular species.

Keywords: Fluorescence; *Ipomoea sepiaria;* inorganic elements; phytochemicals; PC-3 human prostate cancer cell lines.

1. INTRODUCTION

The information generated is specific examination gives applicable pharmacognostical and phytochemical information required for appropriate recognizable proof and validation of foundations of this specific species. The data created is explicit assessment gives pertinent pharmacognostical and phytochemical data needed for proper unmistakable verification and approval of establishments of this particular species. *Ipomoea sepiaria* Koenig Ex. Roxb is a restorative plant considered as one of the source plants of the conventional flavor Lakshmana. I. sepiaria have stepped intestinal motility improving

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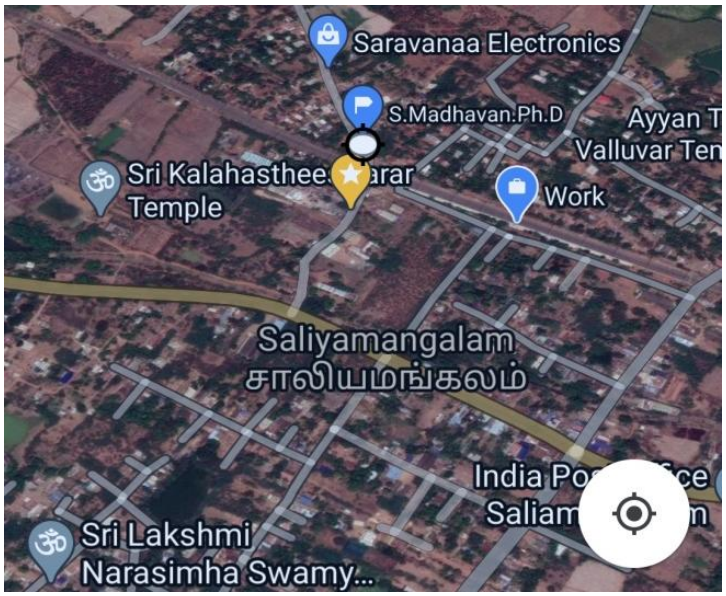
property, among which leaf test is found to be better. Consequently, for the medicinal explanation leaf can be gotten a kick out of the chance to improve development profile and besides to thwart harming social event of the plant [1]. Several pharmacological medicines have been explained to advance weight reduction. Tragically, current pharmacotherapeutic solutions for the treatment of corpulence and related metabolic issues stay restricted and ineffective [2]. Diabetes is a significant overall medical condition inclining to notably expanded cardiovascular mortality and genuine dismalness identified with the advancement of Nephropathy, Neuropathy, and Retinopathy [3]. Adipose tissue is not, at this point considered as a straightforward fat stockpiling tissue. Increment of muscle versus fat mass, especially stomach adiposity, is related with expanded danger of type 2 diabetes mellitus, hypertension, dyslipidemia, cardiovascular sickness, and disease which is probably going to be advanced by modified adipokine emission examples of hypertrophic adipocytes. The overall medical advantages of diminishing fat mass in overweight and large individuals are apparent. Upgrades in stoutness related metabolic dysfunctions are as of now detectable with a decrease of 5-15% of starting body weight [4]. Ethno-botanical data and usually used therapeutic practices from all around the world are of overall noteworthiness and documentation of ethnopharma-cological and ethno-botanical data is a critical basic for extra assessment in the field of common medicine and its execution in clinical practice. ndia is having a rich vegetation with a wide combination of plants, by virtue of the absurd assortments in topographical and climatic conditions winning in the country. The reasonability and prosperity of all the point by point ethnomedical plants needs to be evaluated for phytochemical and pharmacological assessments, especially the plants with high observer arrangement factor, fedility level and utilize worth should be offered need to carryout bioassay and toxicity considers. Seeds are used as cardiovascular depressant, hypotensive, spasmolytic. Plant is in like manner used in the treatment of sterility in women, urinary upkeep, stopping up and gynecological issues. Logical examinations of therapeutic plants are a vital hotspot for disclosures with potential in weight treatment and avoidance. There have been numerous cases for therapeutic plants to apply hostile to stoutness activities of which whatever as *Salacia reticulata*, *Panaxjaponicus*, *Momordica charantia*, and *Dioscorea nipponica* are as of now being used for the anticipation and the treatment of weight. The odds for achievement in therapeutic plant research are unquestionably improved when the determination of a plant depends on its customary use [5]. As a result of our ethnopharmacological overview just as beginning cell culture screening, Ipomoea alba (normal Cameroonian name: Iwong; regular English name: Moon Wine) was the most intense plant with little indications of poisonousness and greatest impact on adipogenesis. Iwong is broadly utilized in the conventional medication of Cameroon to encourage weight reduction and as an enemy of diabetic cure. There are as yet numerous plants that have different restorative qualities yet at the same time not investigated and utilized. The lipids being put away in the cells can be used for energy use and the combination of the lipid bilayer. Lipid saves are a quality of adipocyte cells; expanded lipid bead aggregation inside cells can be a pointer of metabolic insufficiency or pathogenesis. For instance, extreme collection of lipids in liver cells (steatosis) can prompt cell dysfunction [6]. Due to the expansion of protection from anti-microbials, there is a need to grow new and inventive antimicrobial specialists. Among the imaginable wellsprings of new administrators, plants have for quite a while been inspected. Since they contain numerous bioactive builds that can be of interest in remedial. The variety Ipomoea since days of yore has been in nonstop use for various purposes, for example, nourishing and restorative employments. I. sea-going and I. batatus are devoured as food in Sri Lanka, Hong Kong, Taiwan, and China [7]. Therefore we led an ethnobotanical study to distinguish therapeutic plants with weight reduction properties as proposed by conventional healers in Cameroon. In view of this study three therapeutic plants were gathered and their ethanolic extricates screened for against adipogenic activity in preadipocyte culture. Plants contain numerous novel mixes with therapeutic qualities that need logical investigation. Restorative plants are of incredible interest to the scientist in the field of life science particularly biotechnology where a large portion of the drug businesses rely upon the plant parts for the creation of drug drugs. Consequently the current examination zeroed in on phytochemical screening and investigation of bioactive mixes from the ethanol concentrate of *Ipomoea sepiaria* (Koenig Ex. Roxb) leaves utilizing Gas Chromatography and Mass Spectrometry.

2. MATERIALS AND METHODS

2.1 Plant Collection

The fresh leaves of *Ipomoea sepiaria* were collected from Saliyamangalam, Thanjavur District, Tamil Nadu, India.



Map 1. Study area

2.2 Plant Material

The *Ipomoea Sepiaria* leaves was dried up under shade, specifically diminish to a decently crude powder, and put away in golden hued sealed shut holders. The crude type of the medication was utilize for the declaration of physicochemical boundaries similar to dampness content, debris esteems, expanding file, frothing record, unfamiliar natural issue, extractive qualities, and fluorescence analysis.

2.3 Phytochemical Studies

Secondary metabolites in the present studies were carried out on the plant sample revealed the presence of medicinally active constituents. Beneficial drugs and to improve the patient health

2.4 Preparation of Extracts

The powdered plant samples of rhizome (100 g) were used for successive solvent extraction (500 ml) with increasing order of polarities like ethanol, methanol, water, chloroform, ethyl acetate and petroleum ether. At that point it is kept in an orbital shaker at 190-220rpm for 48 hours. The supernatant was collected, filtered through Whatman No.1filter paper and the extract were concentrated by a Rotary flask evaporator at a specific temperature was used based on the solvent system. Each time previous to extract through the next solvent the remains was dried thoroughly to remove the solvent used. The acquired dried concentrate was then precisely gauged, put away in little vials at - 20°C and utilized for the accompanying examinations.

2.5 Phytochemical Screening

The preliminary phytochemical evaluation was carried out by using standard procedure [8-9].

2.6 Qualitative analysis of Inorganic ELEMENTS

Ash of drug material (500mg) was ready and treated with HNO_3 and HCl (3:1 v/v) for one hour. After the filtration, the filtrate was used to perform the following tests [8].

2.7 Determination of Fluorescence: [10]

Fluorescence behavior of leaves powder *Ipomoea Sepiaria* when physical and chemical parameters square measure inadequate because it usually happens with the pulverized medicine the material could also be known from their adulterants on the basis of the visible light study. The Behaviour of the rhizome of *Ipomoea Sepiaria* with different chemical reagents such as Aluminum chloride, sulphuric acid, hydrochloric acid, Ammonia, chloroform, Sodium hydroxide and nitric acid was performed to observe the prevalence of phytoconstituents at the side of color changes. The powders were observed in normal daylight and under short (254nm) and long U.V. light (365 nm).

2.8 Anti-cancer Activity of *Ipomoea sepiaria* against PC-3 Cell Lines Using MTT Assay

To investigated the in vitro inhibitory effects of the ethanolic extract from leaves of Ipomoea sepiaria,PC-3 procured from The were acquired from Kings Institute of Preventive Medicine and Research, Guindy, Chennai., India and affectability of PC-3 to *Ipomoea sepiaria* were dictated by the MTT colorimetric examine. concerning 5000 to 10000 cells approximately in 100 µl MEM media (MEM199, Sigma, India) for each healthy was seed in a 96 well plate and incubated at 37°C, 5% CO_2 for 72 hours. The cells were presented to leaf extricate *Ipomoea sepiaria* at 6 fixations 0µM, 1µM. 2µM, 5µM, 10µM and 20µM. The cells were then treated with, 20µl of freshly ready MTT reagent (5mg/ml in PBS) was added and then DMSO (200 µl) was added to each well to dissolve the formazan crystals. The absorbance (OD) of the way of life plate was perused at a frequency of 492 nm on an ELISA peruser, Anthos Biochrom 2020 ELISA Reader.

3. RESULTS AND DISCUSSION

Plants and their items have been utilized for a long time for human wellbeing. There are as yet numerous plants which have different restorative qualities yet not investigated and utilized. Plants contain numerous novel mixes with therapeutic qualities which need logical investigation. Several chemicals which are derived from plants acts as a drug that are currently used in more countries in the world [11].

3.1 Preliminary Phytochemical Screening

India is most likely the greatest creator of restorative flavors on the planet. These days allopathic framework utilization was diminished because of results, antagonistic responses, so now daily's natural medications use was expanded because of less results and tolerance acknowledgment in these manner home grown medications use was expanded. In the current examination, the endeavor is made to the phytochemical examination of the oil ether and ethyl acetic acid derivation concentrates of *Ipomoea sepiaria* leaves and performed antibacterial, antifungal and anthelmintic exercises [1,12]. The characteristic phytochemical constituents are steroids, triterpenoid, Anthraquinone glycosides, proteins are establish in the concentrates of *Ipomoea sepiaria* leaves. Demonstrated gentle to direct movement and better anthelmintic action when contrasted with ethanolic separate.

Every constituent plays an important role and deficiency of any one constituent may lead to abnormal developments in the body [13].

Every constituent plays an important role and deficiency of any one constituent may lead to abnormal developments in the body. *Ipomoea Sepiaria leaves* powdered are a rich source of all the elements essential for a human being. Supplementation of this *Ipomoea Sepiaria leaves* may be useful for human health associated emerging diseases such as diabetes, hypertension and cancer.

Table 1. Qualitative analysis of phytochemicals analysis *Ipomoea Sepiaria leaves* extract

S. No	Analysed phytochemicals factor	Ethanol	Methanol	Water
1.	Tannin	++	+	+
2.	Phlobatannins	-	+	+
3.	Saponin	+	+	-
4.	Flavonoids	++	+	-
5.	Steroids	++	-	+
6.	Terpenoids	+	+	+
7.	Triterpenoids	+	+	-
8.	Alkaloids	++	+	+
9.	Carbohydrate	+	-	+
10.	Protein	++	-	+
11.	Anthraquinone	+	-	+
12.	Polyphenol	++	+	+
13.	Glycoside	+	-	-

Indications: "+" means positive activity,
"-" means negative activity

Table 2. Qualitative analysis of inorganic elements analysis of *Ipomoea Sepiaria leaves* extract

S. No	Inorganic elements	Result
1.	Calcium	+
2.	Magnesium	+
3.	Sodium	+
4.	Potassium	++
5.	Iron	++
6.	Sulphate	+
7.	Phosphate	+
8.	Chloride	+
9.	Nitrate	+

Indications: "+" means positive activity, "-" means negative activity

Table 3. Fluorescence studies of *Ipomoea Sepiaria leaves* extract

S. NO	Analysed phytochemical factor	Visible Light	Short UV 254nm	Long UV 365nm
1	brown seaweed powder (pp)	Dark Green	Light Green	Light Block
2	PP with water	Light Green	Light Green	Dark Green
3	PP with Hexane	Dark Brown	Light Brown	Brown
4	PP with Chloroform	Light Green	Green	Block
5	PP with Methanol	Dark Green	Light Green	Dark Green
6	PP with acetone	Green	Dark Black	Green
7	PP with IN Sodium hydroxide in water	Light Green	Brownish -Yellow	Light Green
8	PP with IN Hydrochloric acid	Dark Green	Green	Dark Green
9	PP with sulphuric acid with an equal amount of water	Light Green	Light Block	Dark Black
10	PP with Nitric acid diluted with an equal amount of water	Dark Green	Green	Dark Green

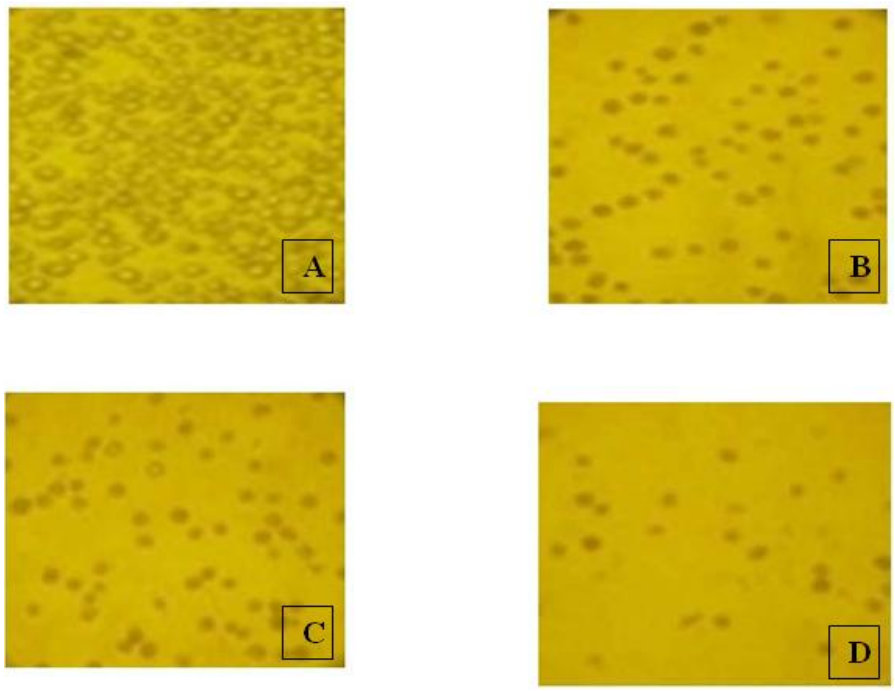


Fig. 1. Cultures of PC-3 cells for 48hours *Ipomoea sepiaria* extract treatment
[A]-Control, [B]- 1µM, [C]-5µM, [D]-10µM

3.2 Fluorescence Analysis Determination

Accordingly, isolates were moreover presented to UV chamber and fluorescence was viewed and consistency was noted as an additional character for recognizing verification.

Past to the phytochemical screening, a flighty evaluation of phytoconstituents be done by the lead of powder drug with different accumulate reagents which powdered prescription showed different shades when it Fluorescence conduct examination of phytochemical factors presence of various synthetics represented [12]. Out of 32 blends 1-Monolinoleoyglycerol trimethyl silylether was recognized as the best reliant on imperativeness regards by zeroing in on record factor7-like 2 (TCFL2) characteristics which is responsible for type 2 diabetes [13]. Due to its ethnic and restorative properties, the interest of the plant is growing bit by bit. A strong and capable micropropagation show in this plant can achieve predominant detachment; shoot progression and entire plant recuperation which is essential for the inducing of picked characteristics inside a specific genotype [14]. Furthermore, micropropagation is a critical contraption for the recovery and conservation of germplasm [15]. Squalene is a hydrocarbon, triterpene, ordinary and crucial bit of the blend of all plant and animal sterols, including cholesterol, steroid hormones, and supplement D in the human body [16]. Squalene is one of the most well-known lipids created by human skin cells [17]. The current examination empowered us to finish up the expected utilization of oil ether and ethyl acetic acid derivation concentrates of *Ipomoea sepiaria* as gentle to direct antibacterial and antifungal specialist yet it has critical anthelmintic movement against Pheretima Posthuma [18]. Extensive exploration is expected to decide the individual part liable for the anthelmintic action and sub-atomic system liable for the equivalent.

3.3 Anticancer Activity of *Ipomoea sepiaria* against PC-3 Cell Line MTT Assay

The anticancer activity of ethanolic remove was investigated by MTT measure. The current experimentation showed that ethanolic extraction of *Ipomoea sepiaria* when presented to different spotlights on PC-3 cells were shown IC50 cell restriction of at about 5µM for 48 hours and about 2µM for 72 hours [19,20]. Uncontrolled improvement due to outside components and inside components inside the natural systems that finally results in death of cells or ending helpfulness of parts inside structures is named as threatening development. Plants have various phytoconstituents like alkaloids, flavonoids, coumarins, polyphenols, etc, has extraordinary antitumor properties [20]. PC3 (PC-3) are prostate infection cell lines that are used broadly in prostate threatening development research.

4. CONCLUSION

Phytochemical examination of critical functions in ID, verification, and foundation of value boundaries of the species is additionally significant and drug organizations for the novel medications for the treatment of different sicknesses. Along these lines, improving the strategies for the subjective and quantitative assurance of restorative plants is significant for quality evaluation in the therapeutic plant industry. Also, the phytochemical investigation gives a decent checking strategy for the occasional changes of the dynamic constituents and during developments and reaping which helps with gathering the biggest measures of the dynamic constituents. The current examination has demonstrated to ethanolic concentrate of *Ipomoea sepiaria* had significant enemy of malignancy movement against prostate disease cell lines. The current experimentation was indicated that watery concentrate of *Ipomoea sepiaria*, when exposed to various fixations on PC-3 cells demonstrated IC50 cell restraint at about 5µM for 48 hours and about 2 µM for 72 hours.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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