

A Conspectus on Anti-Oxidant and Anti cancer Potential of Piindi siddha drug

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Abstract—Objective:

To evaluate the invitro anti oxidant potential of Piindi drug

Methods: In this study, anti oxidant potential of Piindi drug was evaluated with gallic acid as comparison.

Results and Conclusion:

The study demonstrated that Piindi drug has anti-oxidant properties, specifically in the context of The findings provide valuable insights into the potential use of Piindi drug Further research is warranted to explore the mechanisms underlying the anti-oxidant activity and its potential application in clinical settings.

Index Terms—Anti oxidant, Siddha, Piindi,Chooranam,Anti-cancer

I. INTRODUCTION

Siddha medicine is an ancient medical system originating in South India that utilizes natural herbs, minerals, and animal products to treat various ailments.

Piindi drug is a traditional Siddha formulation made from various herbs. It has been used for centuries in the Indian subcontinent for its various health benefits. One of the key properties of Piindi drug is its antioxidant potential, which can help protect the body from oxidative stress and damage caused by free radicals.

Several studies have shown that the ingredients in Piindi drug have significant antioxidant activity, which can help prevent cell damage and reduce the risk of chronic diseases such as cancer. The herbs have been found to scavenge free radicals, inhibit lipid peroxidation, and boost the body's own antioxidant defenses.

The Siddha medicine is a renowned holistic system of traditional medicine emphasizing curative and

preventive measures. Siddha system has developed a rich and unique treasure of drug knowledge in which use of metals and minerals is very much advocated.

II. MATERIALS AND METHODS

The ingredients of Piindi Drug were purified, prepared as per the siddha materica medical procedures. Siddha medicine, an ancient traditional medicine system in India, offers various herbal remedies

Siddha medicine for treating cancer include: Kanchanar Guggulu: This herbal formulation is used to treat various types of tumors and growths. Thuthuvalai Kashayam: A herbal decoction made from Solanum trilobatum plant, it is used for its anti-inflammatory and anti-cancer properties. Amla (Indian gooseberry): Rich in antioxidants, amla is believed to help in preventing and treating cancer.

Turmeric: Known for its anti-inflammatory and anti-cancer properties, turmeric is often used in Siddha medicine for treating cancer.

Arugampul (Bermuda grass): This medicinal grass is used in Siddha medicine for treating various types of cancers.

Anti-Cancer Activity MCF- 7 (Human Breast Adenocarcinoma) cells was initially procured from National Centre for Cell Sciences (NCCS), Pune, India and maintained Dulbecco's modified Eagles medium, DMEM (Sigma aldrich, USA).The cell line was cultured in 25 cm² tissue culture flask with DMEM supplemented with 10% FBS,Lglutamine, sodium bicarbonate (Merck, Germany) and antibiotic solution containing: Penicillin (100U/ml), Streptomycin (100µg/ml), and Amphotericin B (2.5µg/ml). Cultured cell lines were kept at 37°C in a

humidified 5% CO₂ incubator (NBS Eppendorf, Germany).

The viability of cells was evaluated by direct observation of cells by Inverted phase contrast microscope and followed by MTT assay method. Cells seeding in 96 well plate Two days old confluent monolayer of cells were trypsinized and the cells were suspended in 10% growth medium, 100µl cell suspension (5x10⁴ cells/well) was seeded in 96 well tissue culture plate and incubated at 37°C in a humidified 5% CO₂ incubator. Preparation of compound stock 1mg of sample was weighed and dissolved in 1mL DMEM using a cyclomixer. The sample solution was filtered through 0.22 µm Millipore syringe filter to ensure the sterility. Anticancer Evaluation After 24 hours the growth medium was removed, freshly prepared each compound in 5% DMEM were five times serially diluted by two-fold dilution (100µg, 50µg, 25µg, 12.5µg, 6.25µg in 500µl of 5% DMEM) and each concentration of 100µl were added in triplicates to the respective wells and incubated at 37°C in a humidified 5% CO₂ incubator. Non treated control cells were also maintained.

Anticancer Assay by Direct Microscopic observation Entire plate was observed after 24 hours of treatment in an inverted phase contrast tissue culture microscope (Olympus CKX41 with Optika Pro5 CCD camera) and microscopic observation were recorded as images. Any detectable changes in the morphology of the cells, such as rounding or shrinking of cells, granulation and vacuolization in the cytoplasm of the cells were considered as indicators of cytotoxicity.

Anticancer Assay by MTT Method Fifteen mg of MTT (Sigma, M-5655) was reconstituted in 3 ml PBS until completely dissolved and sterilized by filter sterilization. After 24 hours of incubation period, the sample content in wells were removed and 30µl of reconstituted MTT solution was added to all test and cell control wells, the plate was gently shaken well, then incubated at 37°C in a humidified 5% CO₂ incubator for 4 hours. After the incubation period, the supernatant was removed and 100µl of MTT Solubilization Solution (Dimethyl sulphoxide, DMSO, Sigma Aldrich, USA) was added and the wells were mixed gently by pipetting up and down in order to solubilize the formazan crystals. The

absorbance values were measured by using microplate reader at a wavelength of 540 nm (Laura B. Talarico et al., 2004). The percentage of growth inhibition was calculated using the formula: $\text{Mean OD Samples} \times 100 \text{ Mean OD of control group}$ LC50 Value: 80.291µg/mL (Calculated using ED50 PLUS V1.0 Software) Role of Antioxidant: Antioxidants significantly delay or prevent oxidation of oxidizable substrates when present at lower concentrations than the substrate⁹. Antioxidants can be synthesized in vivo (e.g., reduced glutathione (GSH), superoxide dismutase (SOD), etc.) or taken as dietary antioxidants¹⁰. Antioxidants stabilize or deactivate free radicals, often before they attack targets in biological cells¹¹. Recently interest in naturally occurring antioxidants has considerably increased for use in food, cosmetic and pharmaceutical products, because they possess multifacetedness in their multitude and magnitude of activity and provide enormous scope in correcting imbalance^{12,13}. Free radicals and other oxidants have gained importance in the field of biology due to their central role in various physiological conditions as well as their implication in a diverse range of diseases. The free radicals, both the reactive oxygen species (ROS) and reactive nitrogen species (RNS), are derived from both endogenous sources (mitochondria, peroxisomes, endoplasmic reticulum, phagocytic cells etc.) and exogenous sources (pollution, alcohol, tobacco smoke, heavy metals, transition metals, industrial solvents, pesticides, certain drugs like halothane, paracetamol, and radiation). Free radicals can adversely affect various important classes of biological molecules such as nucleic acids, lipids, and proteins, thereby altering the normal redox status leading to increased oxidative stress.

Sample Concentration (µg/mL) OD value I OD value II OD value III Average OD Percentage Viability

Sample code:	Thayiriya	vendhan	chendhuram	6.25	0.9632	0.9618	0.9662	0.9637	66.84	12.5	0.9444	0.9471	0.9436	0.9450	65.54	25	0.8450	0.8469	0.8471	0.8463	58.70	50	0.7820	0.7763	0.7749	0.7777	53.94	100	0.6849	0.6852	0.6814	0.6838	47.43
% of viability =	Potential	-TVC	CONCENTRATIONS(µg/ml)	GALLIC ACID	TVC	12.5	7.29%	34.05%	25	15.83%	56.18%	50	20.28%	62.96%	100	56.04%	65.69%	200	62.98%	72.57													

III. CONCLUSION

Adenocarcinoma) JMSCR Volume 07 Issue 05
May 2019 Page 690-694

From the result of the present in-vitro study it was concluded that the drug Piindi possess considerable anti-oxidant and anti-cancer properties.

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