THERAPEUTIC EFFECTIVENESS OF A SIDDHA FORMULATION

VAYU MATHIRAI: A REVIEW

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ABSTRACT

Siddha system of medicine is one of the most antiquated traditional medicine systems. It activates and strengthens the inner sources of the body. Cancer is a generic term for a large group of disease that can affect any part of the body. Cancer cells can multiply faster when compared to well-differentiated cancer cells. Siddha system of medicine in the first one among them and followed in South India. Siddhars gifted a lot of medicinal treasure to treat human illness. The medicine in this system prepared from raw drug for herbomineral. Vayu Mathirai is a herbomineral preparation with 2 minerals and 1 herbal. It’s used to treat cancer disease particularly for linga puttru [penile cancer] and yoni puttru [vaginal cancer]. This review is aimed to bring out scientific evidence for the therapeutic usage of Vayu Mathirai and focused on the pharmacological activity for the curative nature of the drug. Most of the drugs have anti-cancer, anti-proliferative, anti-oxidant, and anti-inflammatory activities hence justifying its usage in above mentioned disease.

KEYWORDS: Siddha Medicine, Vayu Mathirai, Linga Puttru, Yoni Puttru, Pharmacological Activity.

INTRODUCTION

Siddha system of medicine is one of the most antiquated traditional medicine systems. It activates and strengthens the inner sources of the body. In the siddha system of medicine all
creation and genesis of matter on earth are controlled and regulated by the five elements [Panchapoothas]. It is based on three vital humours [Vazhi,Azhal,Iyam] and dasanadigal. Imbalance in the creative forces subsequently caused defective function affecting the existence qualitatively and quantitatively. Siddhars the founder of siddha system possessed yoga siddhi powers [supernatural powers].

Vayu Mathirai is classical siddha compound drug which is mentioned in siddha text book of Anuboga Vaithiya Navaneetham Part IV. This drug used for cancer disease particularly for linga puttru (penile cancer) and yoni puttru (vaginal cancer). The drug review of Vayu Mathirai is a compound herbomineral drug gives sound evidence for its therapeutic action mentioned in literature. The ingredients of this drug are pooraparpam, gandhagam and karisalankanni. This review focused on the pharmacological activities of each ingredient which supports the traditional claim and the literature search is confined to that area. The search was made from the textbooks in the library of government siddha medical college of palayamkottai, journals, internet database etc.

MATERIALS AND METHODS
Collection of Raw Materials
Rasakarpooram and Gandhagam was purchased from M Gopalan Asan Siddha and Ayurvedic Medicals, Nagercoil.

Authentication of Raw Materials
Raw drugs were authenticated by faculties of Department of Gunapadam, Govt. Siddha Medical College, Palayamkottai.

Process of Preparation
The ingredients given in the table 1 were purified as per the procedures mentioned in siddha literature.

Table 1: Ingredients of Vayu Mathirai.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Tamil name</th>
<th>English name</th>
<th>Family</th>
<th>Chemical name / Botanical name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Poora Parpam</td>
<td>Calomel</td>
<td></td>
<td>Hydragyrum subchloride</td>
<td>1 palam (35 gm)</td>
</tr>
<tr>
<td>2.</td>
<td>Nellikkai Gandhagam</td>
<td>Sulfur</td>
<td></td>
<td>Sulfur</td>
<td>¼ palam (8 ¾ gm)</td>
</tr>
<tr>
<td>3.</td>
<td>Karisalankanni charu</td>
<td>Trailling eclipta</td>
<td>Asteraceae</td>
<td>Eclipta prostrata</td>
<td>Required amount</td>
</tr>
</tbody>
</table>
The mentioned ingredients in the table 1, the purified *Rasa Karpooram* was grinded for 7 days then *gandhagam* was grinded with it and the *karisalankanni charu* was added in required amount and grinded well for 2 *samam* (6 hours), to make *kundrimani* size (130mg) tablets, dried in shadow and store in a airtight container.

**RESULT AND DISCUSSION**

Pharmacological activities of ingredients of *Vayu Mathrai*.

*Poora Parpam* [*Hydragyrum subchloride*]

The anti-inflammatory property of Natural and Synthetic *Poora parpam* was studied using carrageenan induced paw edema method for acute inflammatory activity in rats. The results obtained from the study shows that there was a significant increase in the paw volume of rats injected with 0.1 ml of 1% solution of carrageenan. Rats treated with Natural and Synthetic *Poora parpam* has shown a significant reduction in paw volume at the dose of 1.15 and 2.30 mg / kg which is same as that of reduction volume exhibited by standard drug Indomethacin (20 mg / kg). It was further observed that vehicle control group also exhibited very minimal level of reduction in paw volume at 4 and 5 hour of the experiment. Indomethacin treated group exerted maximum 89.31 % inhibition in carrangeenan induced paw edema at the dose of 20 mg / kg, whereas oral treatment of rat with Natural *Poora parpam* exhibits 63.09 and 83.49 % inhibition at the dose of 1.15 and 2.30 mg / kg respectively. Similarly rats treated with Synthetic *Poora parpam* exhibit 66.5 and 72.81 % inhibition at the dose of 1.15 and 2.30 mg / kg respectively. Natural *Poora parpam* offers significantly higher level of percentage protection against carrangeenan induced paw edema when compared to Synthetic *Poora parpam*.\[^7\]

The cotton pellet granuloma in rat is an excellent chronic inflammatory model that was selected to investigate chronic inflammation (the proliferative phase). Inflammatory response like extravasations, formation of granuloma and various biochemical exudates due to cotton pellet can be readily detected through this technique. The results obtained from the study revealed that there was a significant increase in the weight of the granuloma and high level of granular formation on surgical incision of cotton pellet in sub plantar region of rats. Treatment with Natural and Synthetic *Poora parpam* exhibited dose dependent inhibition of granular formation at the dose of 1.15 and 2.30 mg / kg. Whereas rats treated with standard drug Indomethacin (20 mg / Kg) exerts highest level of reduction in the weight of cotton pellet when compared to positive control group. Standard drug Indomethacin (20 mg / Kg)
exhibited highest 56.06% inhibition on cotton pellet induced granuloma in rats. Natural *Poora parpam* exhibited dose dependent percentage inhibition 20.57 and 32.72% on granuloma formation at both the dose level of dose of 1.15 and 2.30 mg / kg respectively. Similarly oral administration of rats with Synthetic *Poora parpam* exerts percentage inhibition 15.35 and 27.03% on granuloma at dose level of dose of 1.15 and 2.30 mg / kg respectively. Natural *Poora parpam* offers significantly higher level of percentage protection against cotton pellet induced granuloma when compared to Synthetic *Pooraparpam*.\[7\]

**Gandhagam [Sulfur]**

Sulfur is commonly used in Asia as an herbal medicine to treat inflammation and cancer, and potent chemo preventive effects have been demonstrated in various in vivo and in vitro models for sulfur-containing compounds found in naturally occurring products. Here, we report the growth inhibitory and apoptosis-related effects of a newly developed highly purified sulfur (HPS) on immortalized human oral keratinocytes (IHOKS) and on oral cancer cells representing two stages of oral cancer (HN4, HN12) based on a 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay, Western blotting, cell cycle analysis, and nuclear staining. The purity of the sulfur preparation was verified by high-performance liquid chromatography. HPS inhibited the proliferation of immortalized and malignant oral keratinocytes in a dose- and time-dependent manner. FITC-annexin V staining, DNA fragmentation testing, and Hoechst 33258 staining revealed that HPS inhibited cell growth via apoptosis. HPS increased the sub-G1 cell cycle fraction, with decreased expression of cyclins D1, D2, and E and their activating partners cdk2, cdk4, and cdk6, and a concomitant induction of p53 and p21/WAF1. Furthermore, HPS treatment increased the cytosolic level of cytochrome c and resulted in caspase-3 activation; this effect was correlated with Bax up-regulation and Bcl-2 down-regulation. Thus, these data suggest that HPS is a potential candidate for anti-cancer therapy in oral cancer.\[8\]

**Karisalankanni [Eclipta prostrata]**

Total antioxidant activity of the AEEA was evaluated by the phosphomolybdate assay (Prieto et al., 1999), with slight modifications. An aliquot of 0.5 mL of extract solution was added to 5 mL of reagent solution (0.6 M sulfuric acid, 28 mM sodium phosphate, and 4 mM ammonium molybdate). The reaction solutions were allowed to incubate in boiling water bath at 90°C for 90 min. After cooling the samples at room temperature, the absorbance of the solution was measured at 695 nm against blank using a spectrophotometer. The same method
was used for blank sample and 0.5 mL methanol is used instead of extract. Total antioxidant capacity was calculated using the standard graph of ascorbic acid. Results are expressed as equivalent of ascorbic acid in mg per gram of extract.[9]

Investigated the dose dependent in vitro cytotoxicity of AEEA on seven different cancer cell lines MDA-MB-231 (breast), HeLa (cervical), SK-OV-3 (ovary), SW620 (colon), DU145 (prostate), A549 (lung), and PANC-1 (pancreatic), belonging to seven different cancer types. Interestingly, we found AEEA to exhibit cytotoxic effect in all the cancer cell lines but it is most potent in inducing cytotoxic effects against breast cancer cells line. Representative phase contrast microscopic images of vehicle or treated (400 ug/mL of AEEA for 48 hr) cells of seven different cancers showed a clear morphological change. Cells were found to be shrink in size with ruffling and blebbing at cell membranes, suggesting the cells undergoing apoptosis. Further, to test its selective cytotoxicity against cancer cells, we exploited the standard SRB assay to evaluate the cytotoxic effects of AEEA on human breast cancer cell line MCF 7, mouse breast cancer cell line 4T1, and normal epithelial cell line of African green monkey Vero. In our efficient efforts, we observed that AEEA is potently cytotoxic to breast cancer cells, but its toxicity is very minimal to nontumorigenic epithelial cells Vero, implying the nontoxic nature of AEEA.[9]

On the basis of results its represents the methanol extract of Eclipta Prostrata (L.)L has the significant reaction in antioxidant activity. The reactive oxygen species or oxidants, which re formed in the human body due to exogenous and endogenous factors, are found to be responsible for many diseases. Day by Day a lot of research works have shown the potential of phytochemical antioxidants as health benefactors because of their ability to neutralize free radicals activity, reactive oxygen species, or oxidants responsible for the cell damage. From the above, the activity of Eclipta Prostrata (L.)L assayed that, the best antioxidant activity in DPPH radical scavenging activity from the above antioxidant parameters. It should be considered for the antioxidant properties and also beneficial role in their prevention of human disease.[10]

Methanolic extracts of E.prostrata extracts were investigated for anti-free radical activity by DPPH and No assay. It is reported that Flavonoids are natural products which have been shown to possess various biological properties related to antioxidant mechanisms. Thus, the antioxidant activity of E. alba may be attributed to the presence of this compounds as confirmed by qualitative phytochemical analysis. Hence these results support the view that
some traditionally used Indian medicinal plants are promising source of potential antioxidants. Further, study on determination of toxicity of the E. prostrata extracts should be carried on in order to use the plant extracts as antioxidant and dietary supplement.[11]

CONCLUSION
From this literature review it is evident that the most of ingredients of Vayu Mathirai has pharmacological activity of anti proliferative, anti cancer activity, anti oxidant activity, anti inflammatory activity which are responsible for its therapeutic activity claimed in literature.

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None.

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