Screening of Antimicrobial Activity of Medicinal Plant Oils Prepared by Herbal Venders, South India

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Abstract: Tamilnadu have rich of medicinal plant resources in India. Most of the rural peoples and folk peoples having their indigenous knowledge regarding use of medicinal plants and mode of application for different illness of human beings. In the present investigation, what are the medicinal plant oils prepared by herbal venders of Tamilnadu State. The medicinal plant oils are commonly used by human beings, those who are affected by sick. The medicinal plant oils are very useful for patients and economically very low and there is no side effect to patients. We are analyzing the screening of antimicrobial activity of different microbial strains for the effective against medicinal plant oils prepared by herbal venders.

Keywords: Antimicrobial activity • Medicinal plant oils • Folk people • Herbal venders

INTRODUCTION

Ayurveda has eight divisions dealing with different aspects of the art of healing. These include Kaya cikitsa (internal medicine), Salya tantra (surgery), Salakya tantra (treatment of diseases of the head and neck region), Agada tantra (toxicology), Bhuta vidya (management of mental ailments), Bala tantra (pediatrics), Rasayana tantra (rejuvenation therapy and geriatrics) and Vajikarana tantra (science of aphrodisiacs). Around 1250 plants are presently used in various Ayurvedic formulations [1].

Developing a medicinal plants sector, across the various states of India has become an important issue. Different stakeholders in the medicinal plants sector have projected Tamil Nadu, one of the southern states, as an “Herbal State”. This nation has made medicinal plants as a commodity of high value across the state. At the same time, realizing the continuous depletion of this valuable resource, attempts are being made for its large-scale cultivation and multiplication in order to meet its escalating demand as well as long-term sustainability. There are many aspects of research associated with the medicinal plants sector.

The significant contribution to the society, traditional medicine has experienced very little attention in modern research and development and less effort has been done to upgrade the practice [2]. Today the continued deforestation and environmental degradation of habitats in many parts of the country has brought about the depletion of medicinal plants and the associated knowledge. The part of the medicinal plants collected also poses a serious threat to the survival of the species [3, 4]. Loss of the knowledge has been aggravated by the expansion of modern education which has made the younger generation underestimate its traditional values.

Today, many indigenous herbal remedies remain largely undocumented or recognized as potential forms of treatment and consequently continue to be used by only small groups of indigenous populations [5]. Ayurveda and other Indian systems of medicine have been developing since the first human civilizations in the Indian sub-continent. These systems are based on experience and interaction with nature and natural resources. Scientific evidence to prove the rationale of using these formulations in health care is essential to develop and to preserve the cultural heritage.

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MATERIALS AND METHODS

The phytomedicinal survey was conducted in various parts of Tamil Nadu (Coimbatore, Dindigul, Erode, Karur, Madurai, Namakkal, Theni and Trichy Districts) mainly from the street herbal venders during the year 2006-2007. The phytomedicinal information was collected from 37 street herbal venders from various parts of Tamil Nadu by standard schedule [6-8]. The present study recorded names of formulations. The plant materials were identified with the help of standard local floras was done by examining fresh plants procured from the herbal venders [9, 10]. The medicinal formulations of medicinal plant oils were extracted with petroleum ether, hexane and ethanol by Soxhlet’s apparatus. In the case of water extracts, 100 g of material was mixed with 500 ml of distilled water, boiled for one hour, filtered finally cooled at room temperature. Extracts thus obtained were concentrated by using rotary vacuum evaporator and kept at 20°C±2°C. The test extracts (1000 ppm) were prepared with respective solvents separately for each extract. Similarly the test extracts of medicinal oils (muligai ennai) were also prepared with one ml of herbal medicinal oil in 10 ml of Hexane (1:10 v/v). The obtained hexane extracts were used directly for further study [11].

Four selected bacterial species namely Bacillus subtilis, Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa and one fungal species Candida albicans were collected from the microbial type culture collection (MTCC) of Institute of Microbial Technology (IMTECH), Chandigarh, India.

The Durham’s tube slant method was used for the hexane extract of medicinal oils and the activity was calculated in percentage of inhibition [12]. Hexane (95%) was used as control. Solvent extracts of ointments and herbal powders were used against selected microorganisms in preculture plates by disc (5 mm) diffusion method. The activity was measured by zone of inhibition in mm [13].

RESULTS

The results on the antimicrobial activity of medicinal formulations showed that all the formulations were effective against tested microorganisms with different zone of inhibition (Table 1). The hexane extracts and water extracts of kalimbugal and podimarundhugal showed least antimicrobial activity when compared with ethanol and petroleum-ether extracts.

DISCUSSION

Variations in geographical landscaping and biodiversities in the Indian subcontinent have helped to develop the use of a variety of plant species and other natural resources for health care and contributed to the material medica of traditional systems of medicine. More than 25,000 single or polyherbal formulations are used by the tribal and rural population in India. A morphological differentiation in plants used in different Indian system of medicines is shrubs, herbs, trees, climbers and others. Many important modern drugs are plant-based or derived directly or indirectly from the plants. But only 6% of all therapeutically important species, which are noted in ancient literature, have been analysed phytochemically for their therapeutic potential [14]. It is evident from the findings that the street herbal venders have good knowledge about phytomedicines and they are continuing the preservation of vast useful folk knowledge on nature-cure even today. They were well versed with different types of illness and could diagnose only by observing the symptoms of the patients. The herbal remedies have been developed and formulated by their forefathers and these practices are traditionally followed and communicated by verbalized means from generation to generation. The herbal venders often exhibit their folk medicines on the roadside stalls in busy streets of towns and the medicinal formulations are kept in glass jars and the raw plant parts in dried form.

Table 1: Antimicrobial screening of herbal medicinal oils collected from street herbal venders. Values are mean of five replicates

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the medicinal oil</th>
<th>BS (%)</th>
<th>SA (%)</th>
<th>PA (%)</th>
<th>EC (%)</th>
<th>CA (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vadha ennai</td>
<td>80.5</td>
<td>85.2</td>
<td>70.6</td>
<td>79.8</td>
<td>85.3</td>
</tr>
<tr>
<td>2.</td>
<td>Mega ennai</td>
<td>90.1</td>
<td>94.7</td>
<td>80.4</td>
<td>81.9</td>
<td>70.2</td>
</tr>
<tr>
<td>3.</td>
<td>Vembadam ennai</td>
<td>82.5</td>
<td>91.0</td>
<td>95.6</td>
<td>82.3</td>
<td>83.3</td>
</tr>
<tr>
<td>4.</td>
<td>Seedevi ennai</td>
<td>91.7</td>
<td>94.5</td>
<td>83.8</td>
<td>87.1</td>
<td>75.6</td>
</tr>
<tr>
<td>5.</td>
<td>Perali ennai</td>
<td>82.2</td>
<td>89.4</td>
<td>91.1</td>
<td>78.3</td>
<td>70.9</td>
</tr>
<tr>
<td>6.</td>
<td>Kundhal ennai</td>
<td>75.7</td>
<td>69.5</td>
<td>80.3</td>
<td>71.1</td>
<td>86.1</td>
</tr>
<tr>
<td>7.</td>
<td>Hexane (Control)</td>
<td>20.3</td>
<td>18.7</td>
<td>25.1</td>
<td>20.2</td>
<td>15.2</td>
</tr>
</tbody>
</table>

BS = Bacillus subtilis; SA = Staphylococcus aureus; PA = Pseudomonas aeruginosa; EC = Escherichia coli; CA = Candida albicans
To give more support to the above findings, further investigations are needed for the isolation of active principles and pharmacological evaluation of different medicinal plant species reported in this study.

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REFERENCES


