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Antimicrobial Activity of Laehiums 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 administrative for different illness of human beings. In the present study reveals that what are the laehiums prepared by herbal venders of Tamilnadu State. The laehiums commonly used by human beings, those who are affected by sick. The laehiums are very useful for patients and economically very low and there is no side effect to patients. We are analyze the antimicrobial activity of different microbial strains for the effective against laehiums prepared by herbal venders. Listed some medicinal plants used for the preparation of the different laehium during the study period.

Key words: Laehium · Antimicrobial activity · Strain · Medicinal palnts · Herbal venders

INTRODUCTION

In India, Ayurvedic system evolved over 5,000 years ago and is still in practice. The Rig veda and Atharvana veda have included more than 700 medicinal prescriptions [1]. Other systems of medicine such as the Chinese, Unani and Siddha traditions have their roots in Ayurveda. All the medicinal systems mentioned above are mostly based on the plants and plant products that are available in Indian region.

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 esculating demand as well as long-term sustainability. There are many aspects of research associated with the medicinal plants sector. In every society, whether technologically primitive or advanced, there exist some sort of curative recipes for the health maladies [2]. Loss of the knowledge has been aggravated by the expansion of modern education which has made the younger generation underestimate its traditional values. Migration from rural areas to towns and resettlement of people from drought-stricken regions to fertile areas has also resulted in the deterioration of traditional practices [3]. *Chenopodium* is an ethnobotanical plant in central India [4]. The traditional medicines in Assam used by the rural areas people [5]. The all systems of traditional Indian medicine have household remedies [6].

The present investigation is intended to document the medicinal plant resources antimicrobial activity of laehiums from the medicine prepared from the herbal venders.

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 [7, 8, 9]. The present study recorded names of formulations. The plant materials were identified with the help of

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standard local floras was done by examining fresh plants procured from the herbal venders [10,11]. The medicinal formulations of laehiums (ointments) and podimarundhugal (herbal medicinal powders) 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 [12].

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 [13]. 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 [14].

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 (Tables 1 and 2). The hexane extracts and water extracts of laehiums and podimarundhugal showed least antimicrobial activity when compared with ethanol and petroleum-ether extracts.

Table 1: Some herbal medicinal formulations sold by street herbal venders, their composition and ailments

Herbal Formulations (Medium)	Plants Used	Parts Used	Ailments	Mode of Application
1. Medicinal oils				
a. (Muligai ennai) Vadha ennai	*Anethum graveolens*	Seed	Paralysis and	
(Castor oil + neem oil in 2:1 ratio)			displacement of bones	Externally applied on the affected part(s)
	Allium sativum	Bulb		
	Bacopa monnieri	Leaf extract		
	Caesalpinia bondue	Leaf extract		
	Cardiospermum halieacabum	Leaf extract		
	Croton tiglium	Seed		
	Delonix alata	Leaf extract		
	Phyla nodiflora	Leaf extract		
	Piper longum	Seed		
b. Mega ennai				
(Castor oil + Sesame oil in 2:1 ratio)	*Artemisia vulgaris*	Leaf extract	Liver, heart and	Orally administered
(10 ml/day for 48 days)			stomach problems	
	Centella asiatica	Leaf extract		
	Coccinia grandiflora	Leaf extract		
	Coldenia procumbers	Plant extract		
	Ficus religiosa	Bark		
	Michelia champaca	Flower		
	Myristica fragrans	Seed powder		
	Pedalium murex	Seeds		
	Plumbago zeylancia	Root		
	Tinospora cordifolia	Leaf		
c. Vembadam ennai (Castor oil)	*Alpinia galanga*	Rhizome	Ulcer	Orally administered (5 ml thrice a day)
	Caesalpinia bonduc	Root		
	Cardiospermum halicacabum	Leaf extract		
	Hemidesmus indicus	Root		
	Pergularia daemia	Root		
	Solanum xanthocarpum	Root		
	Ventilago maderaspatana	Bark extract		

Table 1: Continued

Seethevi ennai (Coconut oil)	*Cardiospermum halicacabum*	Leaf extract	Respiratory problems	Orally administered (10 ml / day for 15 days)
	Ferula asafoetida	Resin		
	Pergularia daemia	Root		
	Phyllanthus emblica	Fruit		
	Solanum trilobatum	Leaf extract		
	Terminalia chebula	Fruit powder		
	Tylophora zeylanica	Leaf extract		
Perali ennai (Castor oil + Coconut oil in 1:1 ratio) (5 ml / day for 3 days)	*Aloe vera*	Leaf extract	Digestive problems and as appetizer	Orally administered
	Alpinia galanga	Rhizome		
	Curcuma longa	Rhizome		
	Foeniculum vulgare	Seed		
	Harpullia arborea	Fruit		
	Hemidesmus indicus	Root		
	Terminalia chebula	Fruit		
	Trigonella foenumgraceum	Seed		
	Zingiber officinale	Rhizome		
Kunthal ennai (Coconut oil)	*Eclipta prostrata*	Leaf extract	Dandruff and for healthy hair	Externally applied on hair
	Eugenia caryophyllata	Flower		
	Ficus benghalensis	Aerial root		
	Glycyrrhiza glabra	Bark		
	Mimusops elengi	Flower		
	Piper longum	Seed		
	Solanum surattense	Root		
	Vetiveria zizonioides	Root		
2.Ointments (Kalimbugal) Kayakkalimbu	*Aegle marmelos*	Fruit	Cut wounds and external would healing	Externally applied on the wound
	Celastrus paniculatus	Seed		
	Cissampelos pareira	Leaf		
	Cyperus rotundus	Bulb		
	Diospyros microphylla	Leaf		
	Eclipta prostrata	Leaf		
	Phyla nodiflora	Leaf		
	Piper beetle	Leaf		
	Punica granatum	Fruit		
	Sida cordifolia	Root		
Pilavaikkalimbu	*Abrus precatorius*	Seed	External tumours	Externally applied on the tumours
	Azima tetracantha	Root		
	Butea monosperma	Resin		
	Elaeocarpus tuberculatus	Seed		
	Moringa concanensis	Leaf		
	Papaver somniferrum	Seed		
	Plumbago zeylanica	Root		
Erikayakkalimbu	*Aloe vera*	Leaf	Fire burn wounds	Externally applied on the burn wound
	Anisomeles indica	Leaf		
	Azadirachta indica	Seed oil		
	Calotropis procera	Flower		
	Cocos nucifera	Fruit shell		
	Datura stramonium	Leaf		
	Moringa concanensis	Resin		
	Punica granatum	Flower		
	Tinospora cordifolia	Stem		

Table 1: Continuied

3.Herbal medicinal powders (Podimarundhugal)	*Andrographis paniculata*	Leaf	Antidote for snake bite and scorpion sting	Orally administered (50 g / day for 3 days)
Visha Murivu Marundhu	*Aristolochia indica*	Root		
	Cryptolepis buchananii	Root		
	Evolvulus alsinoides	Root		
	Ichnocarpus frutescens	Root		
	Rauvolfia serpentina	Root		
	Rhinacanthus nasutus	Root		
Vayumarundhu	*Allium sativum*	Bulb	Nasobronchial diseases	Orally administered (25 g / day for 5 days)
	Alpinia galanga	Rhizome		
	Cissus quadrangularis	Stem		
	Eugenia caryophyllata	Flower		
	Glyeyrrhiza glabra	Bark		
	Oscimum sanctum	Leaf		
	Piper longum	Seed		
	Trigonella foenumgraecum	Seed		
	Zingiber officinale	Rhizome		
Kabha marundhu	*Allium sativum*	Bulb	Nasobronchial diseases	Orally administered (25 g / day for 5 days)
	Cissus repens	Stem		
	Mukia maderaspatana	Leaf		
	Ocimum sanctum	Leaf		
	Pergularia daemia	Leaf		
	Solanum trilobatum	Leaf		
	Tylophora zeylanica	Leaf		
Sudhaga marundhu	*Centella asiatica*	Leaf		
	Eclipta prostrata	Leaf		
	Hygrophila auriculata	Root		
	Ruta graveolens	Root		
	Withania somnifera	Root		
	Zingiber officinale	Rhizome		
Pedhi marundhu	*Acalypha indica*	Root	Dysentery, diarrhoea and cholera	Orally administered (100g / day for only one day)
	Cardiospermum halieacabum	Root		
	Clerodendrum inerme	Leaf		
	Croton tiglium	Seed		
	Debregaesia elongata	Bark		
	Poeciloneuron indicum	Bark		
	Shorea roxburghii	Bark		
	Sida cordata	Leaf		
	Strychnos nux-vomica	Seeds		
Pulukkolli marundhu	*Cassia obtuse*	Root	Expelling intestinal worms	Orally administered (50 g / day for only one day)
	Cassia senna	Root		
	Chenopodium ambrosiioides	Leaf		

Table 2: Antimicrobial screening (zone of inhibition in nm*) of herbal laehiums (Kalimbugal) and herbal powders collected from street herbal venders. Values are mean of three replicates

	Ethanol extract					Petroleum ether extract					Hexane extract					Water extract				
Medicinal formulations	BS	SA	PA	EC	CA	BS	SA	PA	EC	CA	BS	SA	PA	EC	CA	BS	SA	PA	EC	CA
1. Kayakkkalimbu	20.5	21.2	18.9	19.1	25.1	16.2	15.1	10.2	17.0	19.5	18.3	21.2	2.5	18.1	21.2	11.2	21.4	24.1	19.2	22.1
2. Pilavaikalimbu	28.3	22.5	22.8	23.5	20.2	8.3	11.0	13.1	19.6	21.2	10.1	9.2	5.4	10.8	11.8	25.2	21.4	21.8	19.6	27.3
3. Erikayakkalimbu	21.8	19.6	25.7	18.3	19.8	19.6	22.7	18.5	18.7	19.4	20.4	15.2	7.4	1.9	8.2	18.2	16.3	21.2	28.2	19.3
4. Vishamarundhu	15.7	21.2	16.8	17.2	8.5	5.3	5.8	6.2	5.8	2.1	7.5	8.2	14.3	5.2	8.1	5.1	6.2	7.5	3.5	2.1
5. Vayumarundhu	3.8	4.5	13.2	12.1	11.2	4.8	6.3	7.2	1.5	2.0	3.2	4.5	3.4	2.1	3.5	4.5	4.5	21.1	18.3	11.2
6. Kabhamarundhu	18.5	7.4	15.3	18.2	10.0	21.5	19.5	18.1	19.2	11.3	7.4	8.2	1.9	2.4	1.8	3.5	4.8	5.8	6.6	7.4
7. Sdhagamarundhu	18.2	21.2	24.5	23.1	29.2	20.2	18.1	16.7	18.1	10.5	11.2	12.6	21.2	20.3	15.2	19.1	21.2	25.7	20.4	12.8
8. Bethimarundhu	27.2	21.8	25.4	29.2	18.2	25.1	20.8	21.2	20.6	21.4	18.5	16.2	16.7	18.9	12.8	21.5	23.2	18.5	19.4	15.2
9. Pulukkolli marundhu	26.2	20.5	21.2	25.6	20.8	19.5	16.2	18.3	16.4	20.1	21.2	20.6	25.3	11.6	10.5	26.5	20.1	20.5	21.2	7.4
Control	4.5	4.8	4.9	5.4	3.2	2.1	2.0	1.2	1.3	1.2	1.2	1.1	2.1	0.9	0.6	-	-	-	-	-

BS = Bacillus subtilis, SA = Staphylococcus aureus, PA = Pseudomonas aeruginosa EC = Escherichia coli CA = Candida albicans

DISCUSSION

The phytomedicinal therapy is cheaper easy to procure and administer. Historically western scientific investigation if plant based medicine began with observations on the traditional usage, followed by extraction, identification of active constituents and finally the formulation and clinical trials [15]. Majority of the peoples in the world are relying on the plants rather than commercial products developed from the plant materials [16].

Tamil Nadu has a great floral diversity and comprehensive tradition in the use of medicinal plants for both antibacterial and anti fungal activities [17-19]. In the present study indicates, the herbal formulations of the herbal street venders showed considerable antimicrobial activities. 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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