Abstract
Kerala has a proven unique background in the field of toxicology (visha chikitsa). Classical text book of Keraleeyavishachikitsa describes many yogas which contain herbal and herbo-mineral drugs for the treatment of visha as well as its complications. These formulations are now being underrated and are discarded from the first line of management. Pit vipers are included in the crotalinae subfamily of viperidae are identified as one of the common source of envenomation in Kerala, second only to Russell’s viper. The currently available poly valent anti snake venom has no role in reducing its toxicity. Moreover, the treatment protocol adopted for its management are not ideal. Only symptomatic treatment is recommended in modern system of medicine. Hence there is a need to search for an effective remedy from the traditional text book. Lodraseethadi Agada yoga mentioned in Visha vaidya jyotsnika, Mandali Visha Chikitsa consists of 9 ingredients. The ingredients are analyzed based on Rasapanchaka to find out the effectiveness of the formulation in the management of mandali visha with special reference to pit viper envenomation.

Introduction
Kerala's background in the field of toxicology is unparalleled and has proven to be unique. The climatic conditions of this land are particularly favourable for the growth and survival of many species, especially snakes. The lush vegetation and abundant prey provide a perfect environment for these reptiles to thrive and hence called as land of snakes-Sahyadri or Ahibbommi. The rich legacy of Ayurveda in Kerala owes much to the ancient vishavaidyas who once pinnacled its glory. Their knowledge and expertise in this traditional form of medicine are now being neglected and forgotten. The classical text books of keraleeyavishachikitsa have many formulations with herbal and herbo-mineral drugs for poisoning, but these are no longer commonly used in first line management. Majority of the snake bites constitutes viperine bite which can be symptomatically correlated to mandali sarpa damsa as per Ayurveda. Viperidae family consists of both pit and pit less vipers. Pit vipers including hump nosed pit viper and Malabar pit viper are emerging as a medically important species in Kerala. In the year 2007, as per a study conducted at Little flower hospital and research center Angamali, it was identified as common and dangerous source of envenomation in which

Keywords
Lodraseethadi Agada, Mandali Sarpa visha chikitsa, Pit viper envenomation.

CITATE THIS ARTICLE
MANEESHA M, SEEMAJA G. EFFECT OF LODRASEETHADI AGADA IN MANDALIVISHA WITH SPECIAL REFERENCE TO PITVIPER ENVENOMATION – A REVIEW. Kerala Journal of Ayurveda. 2023; 2(3): 01-05. https://doi.org/10.55718/Aja.230
massive morbidity was seen among plantation workers and more number of cases from northern part of Kerala [1]. Pit vipers are not included in the “Big four” snakes and currently available polyvalent anti snake venom is ineffective in case of pit viper envenomation. Only symptomatic treatment is recommended in the modern system of medicine. This article is an attempt to review the effect of Lodraseethadi Agada described in Visha vaidya jyotsnika, based on the analysis of rasapanchaka for the management of mandali visha with special reference to pit viper envenomation.

AIMS AND OBJECTIVES

This is an attempt to make review of formulation “Lodraseethadi Agada” based on rasa panchaka in the management of mandali visha with special reference to pit viper envenomation.

MATERIALS AND METHODS

Review of literature [2]

Name formulation: Lodraseethadi Agada

The reference of formulation can be found in the chapter 6-Mandali visha chikitsa in Visha vaidya jyotsnika. A Total of 9 Ingredients are mentioned in the formulation. The mode of administration is Paana (Internal administration) [3].

Table 1: Name of ingredients of Lodraseethadi Agada.

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Botanical names</th>
<th>Family</th>
<th>Parts used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lodra</td>
<td>Symplocos racemosa Roxb.</td>
<td>Symplocaceae</td>
<td>Stem bark</td>
</tr>
<tr>
<td>Chandhana</td>
<td>Santalum album Linn.</td>
<td>Santalaceae</td>
<td>Heart wood</td>
</tr>
<tr>
<td>Haridra</td>
<td>Curcuma longa Linn.</td>
<td>Zingiberaceae</td>
<td>Rhizome Root</td>
</tr>
<tr>
<td>Daruharidra</td>
<td>Berberis aristata DC</td>
<td>Berberidaceae</td>
<td>Stem, stem</td>
</tr>
<tr>
<td>Sarala</td>
<td>Pinus longifolia Roxb.</td>
<td>Pinaceae</td>
<td>Stem, bark</td>
</tr>
<tr>
<td>Arka</td>
<td>Calotropis gigantean Linn.</td>
<td>Asclepiadaceae</td>
<td>Root</td>
</tr>
<tr>
<td>Vilwa</td>
<td>Aegel marmalos</td>
<td>Rutaceae</td>
<td>Root</td>
</tr>
<tr>
<td>Manjista</td>
<td>Rubia cordifolia</td>
<td>Rubiaceae</td>
<td>Root</td>
</tr>
<tr>
<td>Padalimoola</td>
<td>Stereospermum sauveolens</td>
<td>Bignonaceae</td>
<td>Root</td>
</tr>
</tbody>
</table>

Method of preparation:

Visha vaidya jyotsnika has not mentioned any method of preparation. As per traditional kashaya preparation method that mentioned in Sarangadara samhitha can be adopted here, [25]. In which each drug in Lodraseethadi Agada taken in equal quantity (1 pala =48 gms) and boiled in 16 times (768 ml) of water and reduced to its 1/8th quantity (96ml) then the divided dose of 48 ml taken twice daily in empty stomach.

Diagram 1: Analysis of Rasa (Taste) of ingredients of Lodraseethadi Agada

Diagram 2: Analysis of Guna (properties) of ingredients of Lodraseethadi Agada
Results and Discussion

Lodraseetadi agada is an effective formulation practiced by many visha vaidyas for the management of pit viper envenomation. It is characterized by four cardinal symptoms; i.e., rapid and profuse development of edema as said in the 2nd vega of mandali damsa, burning sensation, intense pain, and erythema on bite site. Mandali being pitta predominant snake and symptoms of envenomation is due to pitta vikruthi and rakta dusti, as rakta is the asraya dhatu of pitta. In Susruta samhita pitta vedana commenting on this dalhana says that ‘pittavedana oshachoshadayaa’, that means it is characterized by burning sensation and different type of pain. Lodraseethadi agada contain a total of 9 ingredients, in which 45% are thikta rasa and 25% are Madura rasa. Thikta rasa is pithakapha upsasoshanam, dahaharam and vishahara in nature, which help to reduce edema and burning sensation. Madura rasa having vatapithahara properties and helps to reduce pain after bite. 38% of drugs having rookshaguna and 34% having laghuguna which results in kaphasoshana and facilitate entry of medicine to sookshma srotas (capillaries) easily. 60% of drugs are ushna veerya and only 30% has seetaveerya and all the drugs possess katu vipaka. These will indicate the deepana pachana property of drugs in the formulation helps in the breakdown and elimination of toxic metabolites produced by the action of venom.

Conclusion

Snake bite management is a time limiting medical emergency which needs proper diagnosis and immediate intervention. Lodraseethadi agada is found very effective yoga for the management of pit viper envenomation based on rasapanchaka analysis. This yoga is mentioned in visha vaidya jyotsnika for the management of mandali visha. All ingredients are easily available and very effective and easy for preparation and administration. Further clinical research should be carried out for the better understanding of its efficacy.

References

2. Dr.Rajani Nair,Visha Vaidya Jyotsnika, Thiruvananthapuram, kerala, the state institute of language, Mandali visha chikitsa 2017,chapter 6,sloka 13,page 64.
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