



RESEARCH PAPER

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Ethnomedicinal plants used for the treatment of snake bites by Malayali tribal's and rural people in Salem district, Tamilnadu, India

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Abstract

An ethnobotanical survey was carried out among the Malayali tribes and rural people in the Salem district of Tamilnadu for the investigation of snake bite herbal medicines. Traditional botanical drug is the main way of health care for large population of this area. Periodic field trips were undertaken during October 2010 to November 2012 to various rural and forest areas of Salem district. The author has conducted an interview of total 150 informants. The highest number of medicinal species came from Acanthaceae (23.52%). The investigation revealed some unknown medicinal uses of medicinal plants. The botanical name, family, local name (Tamil), used plant part(s), mode of preparation and medicinal uses are provided and traditional practice of 51 plant species, 35 genera and 26 families are discussed here for the treatment of snake bite. The dicots are represented by 47 species of 31 genera and 22 families while monocots are represented by 4 species of 4 genera and 4 families. 92.15% dicotyledons and 7.85% monocotyledons were recorded. The most popular preparations were juice, decoction and paste. Different plant parts were utilized to treat snake bite. The indigenous knowledge of medicinal plants has large potential for investigation and the discovery of new snake bite drugs. Hence there is an immediate necessity to conserve the biodiversity as well as the traditional knowledge by proper documentation for further research in snake bite. Phytochemical constituents investigations of above plants demand to be taken up to find out the detailed ingredients that support in the snake bite.

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Introduction

India is endowed with wealthy biodiversity where medicinal plants diversity is also notable spreading over the country. India is a mega biodiversity country among 12 in the world; it has a forest area of 23.81% of the country's geographical area. Among nearly 45,000 plant species in India about 7,000 - 8,000 species of the plants are reported as medicinal plants utilized by local peoples (Dubey *et al.*, 2004). Ancient method for beginning health care among the local peoples is the utilize of herbal medicines. Around 85 percentage traditional medicines are acquired from herbs and used for several ailments. Used of the herbal medicines based on traditional information is documented by Mukharjee and Wahil (2006). Noted of the medicinal plants is significant not only for focusing of its usefulness but also for the necessity of their conservation.

Snake bite remains a public health trouble in various countries even though it is difficult to be exact about the actual number of cases. The general poisonous snakes found in India are Cobra (*Naja naja*), Russell's viper (*Daboia russelli*), Krait (*Bangarus caeruleus*) and Saw scaled viper (*Echis carinatus*) Bawaskar (2004). Every year approximately 35,000 to 50,000 people reportedly die due to snake bites in India. *Naja kaouthia* and *Vipera russellii* are the usual snakes found throughout India and a great number of deaths occur due to envenomation by these snakes (Alam and Gomes, 2003).

The utilize of plants against the effects of snake bite has been prolonged recognized, high scientific concentration has been given since last twenty years (Santosh *et al.*, 2004). Various medicinal plants, which turn up in ancient medicine recipes or which have been passed on by oral tradition, are believed to be snake bite antidotes. In recent science, there have various attempts to research these plants to explain their effectiveness. India has a prosperous tradition of the utilize of medicinal plants. Several Indian medicinal plants are recommended for the curing of snake bite.

Even today, indigenous and particular local communities practice herbal medicine to treat a difference of ailments, with plants particularly used as folk medicine to cure snakebites (Markz, 1992; Houghton and Osibogun, 1993). Snakebite is a dangerous medical, social and economic trouble in various parts of the world, especially in the tropical and subtropical countries. Envenomations due to snakebites are popularly treated by parenteral administration of horse or sheep-derived polyclonal antivenoms aimed at neutralization of toxins. However, despite widespread advance of this therapy, it is still significant to investigate for various venom inhibitors, either synthetic or real, that could complement or alternate for the activity of antivenoms. Traditional herbal drug is quickly usable in rural areas for the treatment of snakebite. Uses of the plant or sap onto the bite area, bark, drinking plant juice, extracts, chewing leaves or decoctions are some procedures intended to counteract snake venom action.

Plants are utilized either singly, combination with other ingredients or mingled with other plants, as antidotes for snake envenomation by rustic people in India and in several parts of the world. Plants are reputed neutralize the activity of snake venom, with a plethora of plants claimed to be antidotes for snakebites in folk medicine (Kirtikar and Basu, 1975). In another investigation, the aqueous ethanolic extract of the aerial part of *Eclipta prostrata* (Asteraceae), known as an antidote to snake bite in China and Brazil, has been tested against South American rattle snake venom (Mors *et al.*, 1989). The whole plant of *Andrographis paniculata* Nees and *Gymnema sylvestre* R.Br. are used against snakebites in folk medicine (Russell, 1980). *Hemidesmus indicus* root extracts efficiently neutralized Viper venom-induced coagulant, lethal, anticoagulant, haemorrhagic and inflammatory action (Alam *et al.*, 1994). Many plant phytoconstituents such as terpenoids, flavonoids, polyphenols, quinonoid and xanthene possessed protein binding and enzyme inhibiting potentialities and also inhibit snake venom phospholipase A2 (PLA2) activities of both cobra

venom and viper (Selvanayagam *et al.*, 1996). Triterpenoids present in *Emblica officinalis* and *Vitex negundo* may involve in venom inactivation methods. The pentacyclic triterpenes (free or as glycosides) are found largely in many antisnake venom plants such as *Phyllanthus amarus*, *Aloe barbedensis*, *Aegle marmelos*, *Alstonia scholaris* etc. and supply approximately twenty percentage protection against snake venom (Mors *et al.*, 2000). A previous study by Chatterjee *et al.*, (2004) showed that an active biocompound from the *Strychnus nux vomica* seed extract, inhibited viper venom induced lipid peroxidation in experimental animals. The whole plant of *Andrographis serpyllifolia* Wight have been found used as an antidote against snake venom (Sekhar *et al.*, 2011). The leaves of *Andrographis lineata*, *A. ovata*, *A. neesiana*, *A. affinis* and *A. macrobotrys* have been found useful as an antidote against snake venom (Alagesabopathi, 2012).

As a conclusion, a great number of plants have been found to be efficient as antidotes against snake venoms in India (Chopra *et al.*, 1956; Kirtikar and Basu, 1975; Nadkarni, 1976; Alam and Gomes, 2003). Ethnobotanical survey of folk plants for the treatment of snakebites in Southern part of Tamilnadu, India was observed by Perumalsamy *et al.*, (2008). The noted contribution on floral diversity in Tamilnadu was made by Matthew, 1983; Henry *et al.*, 1987; Senthilkumar and Krishnamurthy, 1993. Documentation of traditional information of medicinal plants to treat several ailments has been carried out by Udayan *et al.*, 2006; Sankaranarayanan *et al.*, 2010; Poongodi *et al.*, 2011; Jayanthi *et al.*, 2012. Ethnobotanical investigations in the world reported by Anderson, 1995; Ody, 2000; Paye, 2000.

Salem is one of the most well-known districts of Tamilnadu. The total geographical area of Salem district is covered by various types of forests and blessed with varied flora and fauna. Salem is located in the North central part of Tamilnadu. It lies between 11°14'46" and 12°53'30" North latitude and between 77°32'52" - 78°53'05" East longitude. The

district is mountainous in nature. Enumerated below are some important Hills. They are Shevaroy Hills, Kanjamalai Hills, Kumaragiri Hills, Kalrayan, Palamalai, Suriyamalai, Vanavasi Hills, Bodamalai and Arunoothmalai. The district is well known for its special assemblage of vegetation riches. In this present research study is focused on the preliminary survey of medicinal plants for the biotherapeutic application of snakebite in Salem district, Tamilnadu, India.

Materials and methods

Periodic field trips of ethnobotanical exploration were undertaken in rural and mountainous areas of the study area inhabited by Malayalis and rural peoples during October 2010 to November 2012. The information were collected from the medicine men, village dwellers, women, village herbalists, village headmen and the aged and experienced people the herbal medicine practitioners, vaidyas and their traditional healers following the methodology of Jain and Rao (1976). Information was collected through questionnaires, bilateral discussion and open ended interviews on plants used by Malayali and rustic people. A total 150 informants have been interviewed on random basis. Information about the family, botanical name of species, local name, plant parts used, plant crude drug preparation, mode of applications, dosage and duration were documented (Parinitha *et al.*, 2005) and medicinal uses, plant parts that were identified as having use in ethnobotany were collected and compressed plant species collected were identified with the help of local floras and other useful works viz. Gamble, 1936; Henry *et al.*, 1987; Henry *et al.*, 1989; Matthew, 1983. The voucher specimens were deposited in the Herbarium at Department of Botany, Government Arts College (Autonomous), Salem (India) for future reference. It was found that various of the present data was not so far been usable in literature.

Results and discussion

During the present attention and interaction with the tribals, village dwellers, village headman, vaidyas, village herbalists, the herbal medicine practitioners

and other traditional healers of Salem district, Tamilnadu. A total of 51 species distributed among 35 genera belonging to 26 families were identified for medicinal uses during this investigation. 51 vascular plants were enumerated with their 4 is monocot and 47 is dicot. The largest number of plants used medicinally belongs to family Acanthaceae 12 spp, followed by Rutaceae 5 spp, Asclepiadaceae 3 spp, Caesalpiniaceae 3 spp, Asteraceae 2 spp, Lamiaceae 2 spp, Apocynaceae 2 spp, Asteraceae 2 spp, Aristolochiaceae 2 spp and Combretaceae 2 spp. Remaining 16 families have one species each (Fig.1).

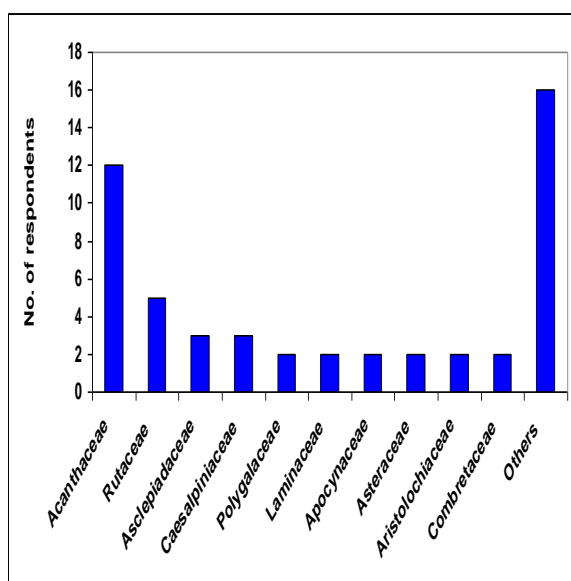


Fig.1. Family wise (number) distribution of ethnomedicines.

As a result, the author has observed that these plants are used especially for snake bite. The present results showed that many parts of individual plant species are used as medicine. The most largely used medicinal plant part was the leaves (20 species), followed by whole plant (10 species), root (9 species), root bark (2 species), rhizome (2 species), fruit (2 species), seed (1 species), tuber (1 species), leaves and fruits (1 species), leaf latex and flower (1 species), bark (1 species) and skin bulb (1 species) (Fig. 2). The medicinal plants are utilized as whole or their parts in their form of juice, decoction, latex, powder and paste (Fig. 3). The medicinal uses are qualities with details such as part(s) used single, combination with other ingredients or mingled with other plants, mode of

preparation and method of administration were recorded in the field.

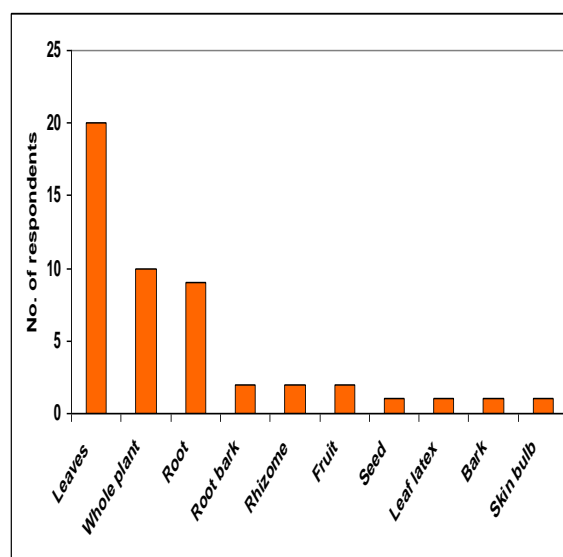


Fig. 2. Analysis of plant part utility in the research.

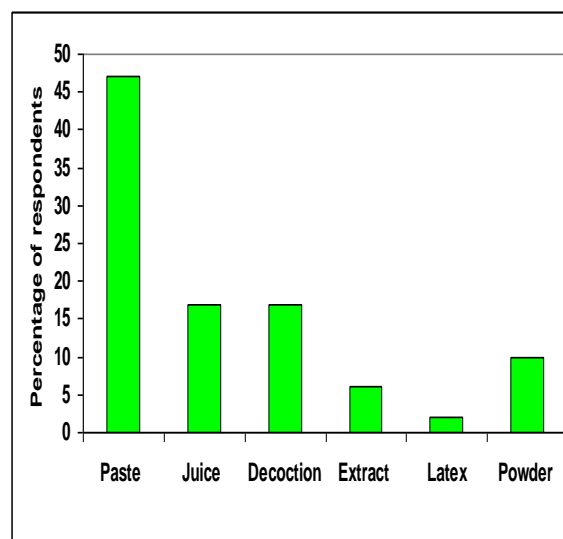


Fig. 3. Plant parts used for drug preparation.

For treating snake bite, the used of aerial plant parts was highest (72.54%) than the underground parts (27.45%). Leaves were observed as the highest popular plant part followed by others such as whole plant, root, root bark, rhizome, fruit, seed, leaf latex and flower, tuber, leaves and fruit, bark, skin bulb and fruit. The percentage of plants parts used is as follows: leaves 39%, whole plant 20%, root 18%, root bark 4%, rhizome 4%, fruit 4%, seed 2%, tuber 2%, bark 2%, skin bulb 2%, leaves and fruits 2% and leaf latex and flower 2% (Fig. 4). Maximum utilize of leaves medicinal application reveals either these

plants are easily availability or the may have potent medicinal properties. Popular medicinal plants such as *Andrographis paniculata*, *Andrographis lineata*, *Aristolochia indica*, *Aristolochia bracteolata*, *Andrographis alata*, *Andrographis serpyllifolia*, *Rhinacanthus nasutus*, *Eclipta prostrata*, *Glorisa superba*, *Hemidesmus indicus* and *Murraya paniculata* were used for snake bite. All the 51 species are used to treatment of snake bite.

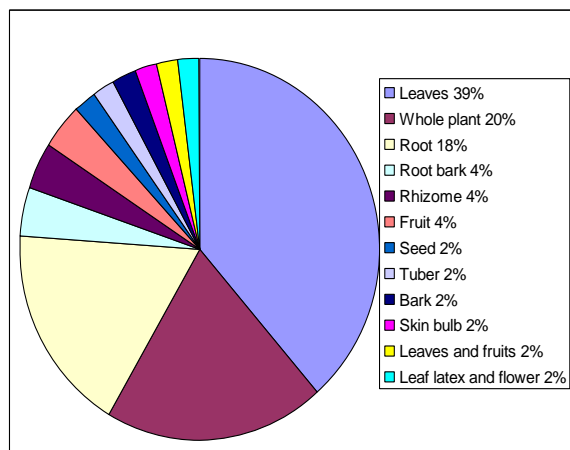


Fig. 4. Analysis of various plant parts of medicinal plants in the study.

The knowledge on folk medicinal utilizes have been compared with current available literature (Ramar Perumalsamy *et al.*, 2008; Selvanayagam *et al.*, 1995; Soares *et al.*, 2005; Sekhar *et al.*, 2011; Poongodi *et al.*, 2011; Das *et al.*, 2012), Despite several papers that have been conducted on the medicinal plants of Southern India (Ramar Perumalsamy *et al.*, 2008; Guru Prasad, 2011; Kuru Suresh *et al.*, 2011; Jayanthi *et al.*, 2012; Balagengathathilagam *et al.*, 2012), the medicinal utilized of plants of Tamilnadu to treat snake bite had been examined in many parts of Tamilnadu except Salem district. The people of the study area still have a potent confidence in efficacy and potentialities of herbal medicine, *Andrographis alata*, *Andrographis paniculata*, *Aristolochia bracteolata* and *Aristolochia indica* plants paste used to treat snake bite in the study area and the same use was also reported by Kuru Suresh *et al.*, (2011). It was notable that 70% among men and 30% among women were knowledgeable tribals and rural people about plants. It was noted that elder people had more information about the traditional utilizes of medicinal

plants than younger generation. Rustic and tribal people of the district have potent confidence in their mode of treatment and observation positive results of their preparations (Perez and Byron, 1999).

Medicine plants presentation an important role in providing information to the researchers in the filed of ethnobotany and ethnopharmacology. The observation of current research showed that traditional medicine performance a essential role among the local people of Salem district. In Salem district, the traditional medicinal mode is very efficient, supportive and successful in treatment of snake bite. Ethnomedicinal survey is most beneficial for research scholars, scientists and scientific companies for further research on isolation and identification of phytoconstituents that can be formulated into various medicines.

Conclusion

The tribal and local people of Salem district of Tamilnadu have been using many plants of therapeutic purpose since time immortal. Local people and tribals mainly depend on the plants for snake bite. They are also very familiar with the antidotes for snake bites. Over exploitation of plant species in the name of drug may lead some species extremely to the disappearance in future. Therefore, attention should be made on correct exploitation and utilized of these plants. The present study may thus prove to be of great use to the pharmacology, phytochemistry, researcher's conservationists, foresters and people interested in herbal medicine. Finally, to conclude, this research paper may also provide worthiness information to pharmacologists and biochemists in screening of individual species and their phytochemicals to accelerate the drug discovery and evolution process for the treatment of snake bite. The study area is wealthy in medicinal plant resources. For the profit of the community the reported plant species should be take attend of and also steps be taken for conservation as well as multiplication of these plant species.

Enumeration

The plant species are arranged in alphabetical order. The following plant species were identified for their utilize in traditional health care system against snake bite. The medicinal uses are described with details such as the part(s) used singly, combination with other ingredients or mixed with other plants, methods of preparation and mode of administration. The enumeration of plants contains botanical name, family name, local name (Tamil), plant parts used and uses. The following is the list of 51 plants studied.

1. ***Achyranthus aspera* L.**
Family - Amaranthaceae
Local name: **Nayuruvi**
Part used: Root
Uses: The paste obtained from the root has been used to treatment of snake bite.
2. ***Acorus calamus* L.**
Family - Araceae
Local name: **Vasambo**
Part used: Rhizome
Uses: Paste obtained from the rhizome has been used to treat antidote for snake bite.
3. ***Aegle marmelos* Correa.**
Family - Rutaceae
Local name: **Vilvam**
Part used: Root bark
Uses: Root bark extract is administered internally for every 4 hours upto day works as an best antidote for cobra bite.
4. ***Alangium salvifolium* (L.) Wangerin.**
Family - Alangiaceae
Local name: **Alangi**
Part used: Root bark
Uses: Root bark decoction is given internally to treat snake bite.
5. ***Allium cepa* L.**
Family - Liliaceae
Local name: **Venkayam**;
Part used: Skin bulb
Uses: The paste taken from fresh skin bulb are used to treat snake bite.
6. ***Ammannia baccifera* L.**
Family - Lythraceae
Local Name: **Neerumulli**
Part used: Whole plant
Uses: About 25 gm whole plant powder mixed with hot cow's milk to drink which treat snake bite.
7. ***Andrographis affinis* Nees.**
Family - Acanthaceae
Local name: **Keeripparandai**;
Part used: Leaves
Uses: Leaf decoction is given orally to treat snake bite.
8. ***Andrographis alata* Nees.**
Family - Acanthaceae
Local name: **Periyanangai**;
Part used: Leaves
Uses : Intaking of leaf juice, about 50 ml, for every 2 hours upto one day is a good remedy for cobra bite.
9. ***Andrographis echioides* Nees.**
Family - Acanthaceae
Local name: **Gopuranthangi**;
Part used: Whole plant
Uses: The paste taken from fresh root is used to treat for cobra bite.
10. ***Andrographis lineata* Nees.**
Family - Acanthaceae
Local name: **Periyanangai**
Part used: Whole plant
Uses: About 30 gm of whole plant paste is directly administered orally for every 4 hours upto one day works as an antidote for cobra bite.
11. ***Andrographis macrobotrys* Nees.**
Family - Acanthaceae
Local name: -
Part used: Whole plant
Uses: Whole plant decoction is given orally to treat antidote for snake bite.

12. ***Andrographis neesiana* Wight.**
Family - Acanthaceae
Local name: -
Part used: Leaf
Uses: Paste of leaves is applied externally on bitten site of snake bite.
13. ***Andrographis ovata* C.B.Clarke.**
Family - Acanthaceae
Local name: -
Part used: Whole plant
Uses: About 25 gm, whole plant paste mixed with cow's milk is administered internally for every 4 hours upto 12 hours works as an best antidote for snake bite.
14. ***Andrographis paniculata* Nees.**
Family - Acanthaceae
Local name: ***Nilavembu***
Part used: Whole plant
Uses: Whole plant decoction is administrated orally for every 2 hours upto day works as an best antidote for cobra bite.
15. ***Andrographis serpyllifolia* (Vahl.) Wight.**
Family - Acanthaceae
Local name: ***Kattuppooraankodi***
Part used : Leaves
Uses: Leaf decoction is given for the treatment of snake bite.
16. ***Anisomeles indica* (L.) Kuntze.**
Family - Lamiaceae
Local name: ***Paeimiratti***
Part used: Leaves
Uses: Paste of leaf is taken to treat snake bite.
17. ***Anisomeles malabarica* (L.) R.Br.**
Family - Lamiaceae
Local name: ***Peymarutti***
Part used: Leaves
Uses: The leaf of juice mixed with cow's milk to drink which treat snake bite.
18. ***Argemone mexicana* L.**
Family - Papaveraceae
Local name: ***Brahmathandu;***
Part used: Leaf
Uses : Intaking of leaf juice, about 50 ml, for every 3 hours upto one day is a best treat for snake bite.
19. ***Aristolochia bracteolata* Lam.**
Family - Aristolochiaceae
Local name: ***Adutinnapalai***
Part used: Leaves
Uses: Leaf paste is used in the treatment of snake bite.
20. ***Aristolochia indica* Li.**
Family - Aristolochiaceae
Local name: ***Perumarunthukodi***
Part used: Whole plant
Uses: The leaf powder mixed with black pepper (*Piper nigrum*) given orally to treat snake bite.
21. ***Atalantia racemosa* Wight and Arn.**
Family - Rutaceae
Local Name: ***Kattukozhinji***
Part used: Fruit
Uses: Fruit pulp paste mixed with black pepper (*Piper nirgum*) is given orally to treat snake bite.
22. ***Bacopa monnieri* (L.) Pennell.**
Family - Scrophulariaceae
Local name: ***Neeripirami***
Part used: Leaf
Uses: 50 ml of leaf powder decoction mixed with hot cow's milk taken orally to cure snake bite.
23. ***Barleria strigosa* Willd.**
Family - Acanthaceae
Local name: ***Nilambaram***
Part used: Root
Uses: The paste obtained from the root has been used to treat antidote for snake bite.

- 24. *Calotropis gigantea* (L.) R.Br.**
Family - Asclepiadaceae
Local name: **Erukku**
Parts used: Leaf, latex and flower
Uses : Leaf latex is applied externally to cure snake bite. The flower juice mixed with black pepper (*Piper nigrum*) is given orally to curing snake bite.
- 25. *Cassia alata* L.**
Family - Caesalpiniaceae
Local name: **Seemaiyagathi**
Part used: Leaf
Uses: Paste of leaves is applied externally on the spot of snake bite.
- 26. *Cassia occidentalis* L.**
Family - Caesalpiniaceae
Local name: **Peeperambi, Thagarai**
Part used: Root
Uses: Orally administration of root paste, about 30 g. for every 2 hours upto a day is best cure for cobra bite.
- 27. *Cassia tora* L.**
Family - Caesalpiniaceae
Local name: **Tagarai**
Part used: Leaf
Uses: 50 ml of leaf decoction mixed with cow's milk is used to treat snake bite.
- 28. *Curcuma longa* L.**
Family - Zingiberaceae
Local name: **Manchal**
Part used: Rhizome
Uses: Rhizome paste is applied externally against snake bite.
- 29. *Eclipta alba* (L.) Hassk.**
Family - Asteraceae
Local Name: **Manchalkarisalankanni**
Part used: Whole plant
Uses : whole plant juice is given orally to treat antidote for snake bite.
- 30. *Eclipta prostrata* L.**
Family - Asteraceae
Local name: **Karisalanganni;**
Part used: Leaves
Uses: Leaf paste is applied externally to treat snake bite.
- 31. *Emblica officinalis* Gaertn.**
Family - Euphorbiaceae
Local name: **Nelli**
Parts used: Leaves and fruits
Uses: Leaf juice alone is also taken orally to treat snakebite. 50 ml of fruit juice mixed with water or goat's milk or cow's milk to drink which treat snake bite.
- 32. *Evolvulus alsinoides* L.**
Family - Convolvulaceae
Local name: **Vishnukiranthai**
Part used: Whole plant
Uses: Whole plant extract is considered as strong antidote for snake bite.
- 33. *Gloriosa superba* L.**
Family - Colchicaceae
Local name: **Kalappaikkilangu**
Part used: Tuber
Uses: Tuber paste is applied externally on the wound of snake bite.
- 34. *Heliotropium indicum* L.**
Family - Boraginaceae
Local name: **Nakkipoo**
Part used: Leaves
Uses: 50 ml. of leaf decoction mixed with hot water is used to cure snake bite.
- 35. *Hemidesmus indicus* R.Br.**
Family - Asclepiadaceae
Local name: **Nannari**
Part used: Root
Uses: Decoction of root is taken orally to treat snake bite.
- 36. *Justicia tranquebariensis* L.**
Family - Acanthaceae
Local name: **Thavasimurungai**
Part used: Leaf
Uses: 50 ml of leaf juice is given orally to treat snake bite. Leaf paste applied externally on the sight of snake bite work as an antidote for cobra bite.

37. ***Limonia acidissima* L.**
Family - Rutaceae
Local name: **Vila**
Part used: Root
Uses: 50 ml of root juice mixed with hot water is used to treat snake bite.
38. ***Luffa cylindrica* (L.) Roemer**
Family - Cucurbitaceae
Local Name: **Nurapeerku**
Part used: Leaf
Uses: 50 ml of leaf juice mixed with Cow's milk is given internally to treat snake bite.
39. ***Murraya paniculata* (L.) Jack.**
Family - Rutaceae
Local name: **Angarapputhalai**
Part used: Leaf
Uses: The leaf powder mixed with hot water to drink which treat snake bite.
40. ***Naringi Crenulata* (Roxb.)**
Family - Rutaceae
Local Name: **Magavilvam**
Part used: Root
Uses : Root paste mixed with cow's milk taken orally to curing snake bite.
41. ***Opilia amentacea* Roxb.**
Family - Opiliaceae
Local Name: **Manjandamaram**
Part used: Root
Uses: Root paste is taken internally to cure snake bite.
42. ***Polygala arvensis* Willd.**
Family - Polygalaceae
Local name: -
Part used: Whole plant
Uses: Paste of whole plant is applied on effected part in snake bite.
43. ***Polygala chinensis* L.**
Family - Polygalaceae
Local name: **Siriyangai**
Part used: Root
Uses: Root extract is used to cure snake bite.
44. ***Rauwolfia serpentina* (L.) Benth.ex Kurz.**
Family - Apocynaceae
Local name: **Sarpagaanthi**
Part used: Root
Uses: Root paste mixed with cow's milk taken internally for snake bite.
45. ***Rauwolfia tetraphylla* L.**
Family - Apocynaceae
Local name: **Pampukaalaachchedi**
Part used: Whole plant
Uses: Paste made from this whole plant applied externally on the wound of snake bite.
46. ***Rhinacanthus nasutus* (L.) Kurz.**
Family - Acanthaceae
Local name: **Nagamalli**
Part used: Leaves
Uses: The paste of the leaf is applied externally to treatment of snake bite.
47. ***Strychnos nux-vomica* L.**
Family - Loganiaceae
Local name: **Yeti**
Part used: Seed
Uses: The seed powder is antidote for snake bite.
48. ***Terminalia arjuna* (DC) Wight and Arn.**
Family - Combretaceae
Local name: **Vellamarthu;**
Part used: Bark
Uses: Paste of bark is applied on affected part in snake bite.
49. ***Terminalia chebula* Retz.**
Family - Combretaceae
Local name: **Kadukkaimaram;**
Part used: Fruit
Uses: Powdered fruit is mixed with hot water to drink which cure snake bite.

50. *Tylophora indica* (Burm.f.) Merr.

Family - Asclepiadaceae

Local Name: **Asthamakodi**;

Part used: Leaf

Uses: 50 ml of leaf juice mixed with hot water is given orally to treat snake bite. Paste from this leaf applied externally on the wound of snake bite.

51. *Vitex negundo* L.

Family - Verbenaceae

Local name: **Nochi**

Part used: Leaf

Uses: The paste of the leaf is applied externally to treat snake bite.

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