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**Review Article** 

### PROFILE OF MEDICINAL PLANTS WITH ANTI-OPHIDIAN PROPERTY

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#### ABSTRACT:

The morbidity and mortality associated with snake bite is a serious health concerned especially in developing countries. The rural communities are the worst affected and where it is considered as one of the occupational health hazards especially related to agriculture industry. About 50,000 deaths are recorded per year as a result of snakebite. The scenario may sometimes deteriorate further because of Ineffectiveness and or complications of the anti snake venom as well as untimely interventions or lack of appropriate medications in venomous snakebite cases. The common poisonous snakes found in India are Cobra (*Naja naja*), Krait (*Bangarus Caeruleus*), Russell's viper (*Daboia russelli*) and saw scaled viper (*Echis Carinatus*). Over the years many attempts have been made for the development of snake venom antagonists from plants sources. Ethnobotanical data suggests that certain plant species are used traditionally all over the world to treat snakebite cases successfully. Randomness or the use of a variety of species in different families appears to be a feature of traditional snake bite treatments. Present article deals with the Traditional, ethno botanical and pharmacological review of certain plants utilized in the cases of snakebite. **Key Words**: Snakebite, Antivenom, Ethnobotany, Traditional, Herbs

### **INTRODUCTION:**

Snake-bite is an important and serious medico-legal problem in many parts of the world especially the rural communities are the worst affected and where it is considered as one of the occupational health hazards mainly related to agricultural industry.

It has been estimated that 5 million snake-bite cases occur worldwide every year, causing about 100,000 deaths.<sup>1</sup> On an average, nearly 2, 00,000 persons fall prey to snake-bite per year in India and 35,000-50,000 of them die every year.<sup>2</sup> But data of snake-bite always remain unreliable due to improper reporting system. The global disparity in the epidemiological data reflects variations in health reporting accuracy as well as the diversity of economic and ecological conditions.<sup>3</sup>

Venomous snakes are found throughout most of the world (including many oceans), except for a few islands, frozen environments, and high altitudes.<sup>4</sup>

Polyvalent anti snake venom is the only therapeutic agent available throughout the world. Major drawback of serum therapy is its prohibitive cost and chance that victims may avail untimely medical care because of remote locations when bitten. Generally anti snake venom serum scarce commodity in quality and supply to rural areas because of requirement of ideal storage condition which may not be possible in rural area. Apart from these there is a great chance that it may also cause hypersensitivity.

#### **EPIDEMIOLOGY OF SNAKEBITE:**

Burdwan district of West Bengal state in India, an annual incidence of 0.16% and mortality rate is estimated to be of 0.016% per year.<sup>5</sup> In Sri Lanka, the overall annual mortality from a single venomous species ranges from 5.6 per 100,000

to as high as 18 per 100,000 in some areas.<sup>6</sup> Myanmar seems to have the highest mortality in Asia and 70% snakebites are by Russell's viper.<sup>7,8</sup> The other States which show high incidences include Tamil Nadu, Uttar Pradesh and Kerala.<sup>9</sup> All though majority of the snake species are non venomous constituting only 15% of known 3000 species.<sup>10,11,12</sup> It has been also estimated that about 25% of snakebite cases can be dry bites i.e. venomous snake bite without envenoming,<sup>13</sup> and is characterized by fang and tooth marks and the absence of injected poison.<sup>14</sup>

There are various medicinal plants which have been used against snake envenomation in folk and traditional medicines. In ancient Indian system of *Ayurveda*, there are many plants recommended in the management of snakebite cases. Atharva Veda, Rig Veda, Charak & Sushruta Samhita of the Indian continent mentions the usage of various herbal antidotes against snake envenomation. Not only Indian traditional medicines but also Chinese, Egyptian, Greek, Roman, Syrian, etc., folk lore mentions the usage of folk & traditional medicinal plants in snake bite treatments.<sup>15</sup>

Most of these traditional, ethno medicinal herbs are utilized without any scientific validation. Therefore, this type of treatment needs thorough scientific investigation. These herbs are lacking with proper scientific validation, but may prove as an alternative to the anti snake venom when studied thoroughly. The present review article is concentrating on the diverse traditional & folk herbs practised globally exhibiting anti snake venom properties. This might be a stepping stone in ascertaining the future therapy against venomous snakebites and its management.

SN	Drug (Latin Name)	Family	Part used
1	Abrus Precatorius <sup>15</sup>	Fabaceae	Root Extract
2	Abutilon indicum <sup>81</sup>	Euphorbiaceae	Leaf is used
3	Acacia Arabica <sup>81</sup>	Miomosaceae	Leaf is used
5	Acacia leucophloea <sup>82</sup>	Mimosaceae	Bark is used
6	Acalypha indica <sup>15,16,82</sup>	Euphorbiaceae	Ethanolic leaf extract are active against V. russelli

7	Achillea millefolium <sup>82</sup>	Asteraceae	Paste of Whole plant
8	Achyranthes aspera <sup>15,17,82</sup>	Amaranthaceae	Whole plant extract is found to be effective against
			snake venom
9	Acorus calamus <sup>15,82</sup>	Acoraceae	Extract of the rhizomes
10	Actaea racemosa <sup>15</sup>	Ranunculaceae	Extract of the rhizomes
11	Aegle marmelos <sup>10,02</sup>	Rutaceae	Plant Extracts are effective against snake venom
12	Aerva lanata	Amaranthaceae	Rhizome is used
13	Allamanda cathartica <sup>15</sup>	Anangiaceae	Leaves Branches & stem
14	Allium cana <sup>82</sup>	Liliaceae	Paste of skin bulb
16	Aloe harhadensis <sup>15</sup>	Xanthorrhoeaceae	Leaves
17	Aloe vera <sup>18</sup>	Liliaceae	Plant Extracts are effective against snake venom
18	Alstonia scholaris <sup>18</sup>	Apocynaceae	Plant Extracts are effective against snake venom
19	Ammannia baccifera <sup>19</sup>	Lythraceae	Whole plant powder administered orally as an antidote
	-		for Bungarus fasciatus bite
20	Ampelozizyphus amazonicus <sup>20</sup>	Rhamnaceae	Stem bark extract are effective against snake venom
21	Anacardium occidentale <sup>21</sup>	Anacardiaceae	Methanolic extract of barkare effective against $V$ .
		<b>D</b> 1	russelli
22	Anagalis arvensis "	Primulaceae	Plant extract is useful against snake venom
23	Andrographis naniculata <sup>22, 23, 82</sup>	Acanthaceae	Juice of Leaf and nowers
24	Anarographis puniculaid	Acantilaceae	We manone plant extract active against v. russem
25	Andrographis serpvllifolia <sup>19</sup>	Acanthaceae	Whole plant paste with cow urine works as an antidote
20			for Russell Viper Russell Viper bite
26	Anisomeles malabarica <sup>80</sup>	Lamiaceae	Leaves are used as an antidote
27	Annona senegalensis <sup>15</sup>	Annonaceae	Root & Bark Extracts
28	Anogeissus latifolia <sup>19</sup>	Combretaceae	Whole plant powder administered orally as an antidote
			for Bungarus fasciatus bite
29	Antidesma bunius	Phyllanthaceae	Leaves Extracts
30	Apuleia leiocarpa <sup>24</sup>	Leguminosae	Plant Extracts are effective against snake venom
31	Arctium lappa	Asteraceae	Plant extracts
32	Areca catechu	Arecaceae	Plant Extracts are effective against snake venom
33	Argunia argentea <sup>26</sup>	Boraginaceae	Methanolic extract are effective in <i>Trimeresurus</i>
5.	in gusta argemea	Doruginaceae	flavoviridis
35	Arisaemia tortuosum <sup>81</sup>	Aracaceae	Roots are used
36	Aristolochia grandifolia <sup>15</sup>	Aristolochiaceae	Whole Plant extracts
37	Aristolochia indica <sup>27,82</sup>	Aristolochiaceae	Methanolic plant extract effective agaisnt, <i>E. carinatus</i>
38	Aristolochia odorantissima	Aristolochiaceae	Leaves extracts
39	Artstolochia shimaaal	Aristolochiaceae	folklore use
40	Artemista campesiris	Asteraceae	Macrovipera lebetina
41	Atalantia racemosa <sup>19</sup>	Rutaceae	Oral administration of fruit pulp paste works as an
			antidote to Cobra bite
42	Azadirachta indica 15,30,82	Meliaceae	Methanolic leaf extract are used against cobra and
42	Due al muin tuine ann 31	A -4	Russell s viper
45	Baccharis irimera	Asteraceae	iararacussu
44	Bacona monnieri <sup>19</sup>	Plantaginaceae	Leaf powder decoction is a good antidote for Cobra bite
45	Balanites gegyntiaca <sup>32</sup>	Balanitaceae	Acetone and methanolic extract of stem bark are useful
-			in E. carinatus
46	Biophytum sensitivum <sup>15</sup>	Oxalidaceae	Whole plant extract
47	Boerhavia diffusa <sup>80</sup>	Nyctaginaceae	Root
48	Boswellia dalzielli 33	Burceraceae	Methanolic extract are active against E. carinatus
49	Bixa orellana <sup>13,19,34</sup>	Bixaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
50	Rombar caiba <sup>15</sup>	Malvacess	chective against <i>Bothrops atrox</i>
50	Brongniartia intermedia <sup>35</sup>	Legiminosae	Root extract are effective against R attor
52	Brongniartia nodalvrioides 35	Leguminosae	Root extract are effective against <i>B. atrox</i>
53	Brownea rosademonte <sup>15,34</sup>	Caesalpiniaceae	Ethanolic extract of stem Bark, ripe fruits, leaves are
		r	effective against <i>Bothrops atrox</i>
54	Brunfelsia uniflora <sup>24</sup>	Solanaceae	Plant Extracts are effective against snake venom
55	Buchnania lanzan <sup>15</sup>	Anacardiaceae	Stem & Bark
56	Bryophyllum pinnatum <sup>81</sup>	Crassulaceae	Leaf is used
57	Byrsonima crassa <sup>30</sup>	Malpighiaceae	Plant extract are effective against <i>Bothrops jararaca</i>
58	Calesalpinia bonduc <sup>32</sup>	Caesalpiniaceae	Paste of seeds
59	Calienaula officinalis <sup>62</sup>	Asteraceae	Juice of Howers is taken orally
61	Calotronis gigenteg <sup>15</sup>	Apocynaceae	Leaves & Root
62	Calotropis procera <sup>37,38</sup>	Apocynaceae	Leaves Latex & Root
63	Calycopteris floribunda <sup>80</sup>	Combretaceae	Root
64	Capsicum frutescens <sup>15</sup>	Solanaceae	Fruit
65	Careya arborea <sup>39</sup>	Lecythidaceae	Bark Extracts are effective against snake venom
66	Carmona retusa <sup>19</sup>	Boraginaceae	Paste of whole plant works as a best antidote for Russell
1		1	Viper bite

67	Casearia mariquitensis <sup>15</sup>	Flacourtiaceae	Whole plant
68	Casearia sylvestris 15,40,41	Flacourtiaceae	Aqueous extract of leaves & bark are effective against
	-		Bothrops genus
69	Cassia alata <sup>82</sup>	Caesalpiniaceae	Leaf paste is applied
70	Cassia occidentalis <sup>15,17,19</sup>	Leguminosae	Root Extract is useful against snake venom
71	Cassia tora <sup>81,82</sup>	Leguminaceae	Root is used
72	Cassine glauca <sup>19</sup>	Celastraceae	Root paste & garlic paste is a good antidote for Pit viper
	_		bite
73	Castilla elastica <sup>15</sup>	Moraceae	Leaves, brnches & stem
74	Cayratia trifolia <sup>81</sup>	Vitaceae	Roots are used
75	Cecropia peltata <sup>15</sup>	Urticaceae	Leaves
76	Ceiba pentandra <sup>19</sup>	Malvaceae	Oral administration of root paste with cow urine remedy
			for Cobra bite
77	Celastrus paniculatus <sup>80</sup>	Celastraceae	Crushed stem and bark
78	Centipeda minima <sup>18</sup>	Compositae	Plant Extracts are effective against snake venom
79	Chiococca brachiata <sup>24</sup>	Rubiaceae	Plant Extracts are effective against snake venom
80	Cinnamomum zeylanicum <sup>24</sup>	Lauraceae	Whole Plant
81	Cissus assamica <sup>42</sup>	Vitaceae	Leaves
82	Citrus limon <sup>15,34,82</sup>	Rutaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
	42		effective against Bothrops atrox
83	Clerodendrum viscosum <sup>43</sup>	Verbenaceae	Alcoholic root extract are effective against <i>N. naja</i>
84	Clinacanthus mutans <sup>32</sup>		
85	Clitoria ternatea <sup>61</sup>	Leguminaceae	Leaf is used
86	Columnea calbreyeriana	Gesneriaceae	Whole plant
87	Commelina bengalensis °1	Commelinaceae	Roots are used
88	Corallocarpus epigaeus <sup>19</sup>	Cucurbitaceae	Powder of dried tuberous with root of Aristolochia
			indica and whole plant of Andrographis paniculata
00	C 1: 1 15.44	D :	remedy for Cobra bite.
89	Cordia verbenacea	Boraginaceae	Rosmarinic acid from methanolic extract is effective
00	Costus Insing 15,34	Castagona	Ethanolia avtract of stom. Park ring fruits laguas are
90	Costus tastas	Costaceae	effective against <i>Pothyang atuar</i>
01	Costus spaciosus <sup>80</sup>	Castagona	Poot
91	Costus speciosus	Dignoniagona	Fruit
92	Crescentia cujete	Amaryllida.ceae	Methanolic extract of bulb are active against <i>Echic</i>
95	Crinum jugus	Amarymuaceae	ocellatus Ritis ariotans & Naja nigricollis
9/	Croton urucurana <sup>15,46</sup>	Funhorbiaceae	Aqueous extract are active against <i>B jararaca</i>
95	Curcuma longa <sup>15,82</sup>	Zingiberales	Rhizomes
96	Curcuma zedoaria <sup>47</sup>	Zingiberaceae	Aqueous extract are active against N naig sigmensis
97	Cucumis colocynthis <sup>15</sup>	Cucurbitaceae	Roots
98	Cymbopogon citrates <sup>82</sup>	Poaceae	Whole plant is used
99	Cyperus rotundus <sup>82</sup>	Cyperaceae	Decoction of rhizome is used
100	Cynara scolymus <sup>24</sup>	Asteraceae	Plant Extracts are effective against snake venom
101	Dalbergia melanoxylon <sup>82</sup>	Fabaceae	Decoction of stem and bark is used
102	Davilla elliptica <sup>36</sup>	Dillenjaceae	Plant extract are effective against <i>Bothrons jararaca</i>
102	Derris scandens <sup>19</sup>	Fabaceae	Root powder with <i>Sanindus emarginatus</i> fruit pulp
			powder is administered orally for Pit viper bite
104	Desmodium motorium <sup>19</sup>	Fabaceae	Paste of whole plant works as a best antidote for Russell
			Viper bite
105	Dichrocephala integrifolia <sup>19</sup>	Asteraceae	Root bark infusion is administered orally as an antidote
			for Bungarus caeruleus
106	Diodia scandens <sup>15</sup>	Rubiaceae	Whole plant
107	Diospyros kaki <sup>15,28</sup>	Ebanaceae	Folklore use
108	10		
1	Dipteryx alata 48	Fabaceae	bark extract is effective against B. jararacussu &
	Dipteryx alata 48	Fabaceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i>
109	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup>	Fabaceae     Moraceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom
109 110	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>13,34</sup>	Fabaceae Moraceae Araceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are
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109 110 111 112 113 114 115 116 117	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,43</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus, G. shedaoensis, G. ussuriensis,</i> <i>Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidate for Russell Vines hits
109 110 111 112 113 114 115 116 117	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,34</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea pallid <sup>15</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus, G. shedaoensis, G. ussuriensis, Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidote for Russell Viper bite Plant Extracts are affective against malayan pit
109 110 111 112 113 114 115 116 117 118	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,34</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea pallid <sup>15</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup> Elephantopus scaber <sup>24</sup> Emblia officia signalia <sup>15,52</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae         Asteraceae         Europatriceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus, G. shedaoensis, G. ussuriensis, Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidote for Russell Viper bite Plant Extracts are affective against snake venom Root average are affective against snake venom
109 110 111 112 113 114 115 116 117 118 119 120	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,34</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea pallid <sup>15</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup> Elephantopus scaber <sup>24</sup> Emblica officinalis <sup>15,52</sup> Eviacea purpurea <sup>15</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae         Asteraceae         Euphorbiaceae         Compositaceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus, G. shedaoensis, G. ussuriensis, Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidote for Russell Viper bite Plant Extracts are effective against snake venom Root extract are effective against cobra and viper Loving
109 110 111 112 113 114 115 116 117 118 119 120	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,34</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea pallid <sup>15</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup> Elephantopus scaber <sup>24</sup> Emblica officinalis <sup>15,52</sup> Enicostemma axillare <sup>15</sup> Erareta odula <sup>81</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae         Asteraceae         Gentianaceae         Muraceae         Muraceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus, G. shedaoensis, G. ussuriensis, Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidote for Russell Viper bite Plant Extracts are effective against snake venom Root extract are effective against cobra and viper Leaves Stam is used
109           110           111           112           113           114           115           116           117           118           119           120           121	Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,34</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea pallid <sup>15</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup> Elephantopus scaber <sup>24</sup> Emblica officinalis <sup>15,52</sup> Enicostemma axillare <sup>15</sup> Ensete edule <sup>81</sup> Ensete ma canarensis <sup>15</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae         Asteraceae         Gentianaceae         Musaceae         Emigraticeae         Environ         Compositae         Asteraceae         Euphorbiaceae         Gentianaceae         Musaceae         Eumigategee	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus</i> , <i>G. shedaoensis</i> , <i>G. ussuriensis</i> , <i>Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidote for Russell Viper bite Plant Extracts are effective against snake venom Root extract are effective against cobra and viper Leaves Stem is used Phizmes
109           110           111           112           113           114           115           116           117           118           119           120           121           122           123	Dipteryx alata <sup>48</sup> Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,34</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea pullid <sup>15</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup> Elephantopus scaber <sup>24</sup> Emblica officinalis <sup>15,52</sup> Enicostemma axillare <sup>15</sup> Ensete edule <sup>81</sup> Equisetum giganteum <sup>15</sup> Erwithing arcale <sup>82</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae         Asteraceae         Gentianaceae         Musaceae         Equisetaceae         Enclaseaa	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus, G. shedaoensis, G. ussuriensis, Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidote for Russell Viper bite Plant Extracts are effective against snake venom Root extract are effective against cobra and viper Leaves Stem is used Rhizomes Luica & Paste of Bark is used
109           110           111           112           113           114           115           116           117           118           119           120           121           122           123           124	Dipteryx alata <sup>48</sup> Dipteryx alata <sup>48</sup> Dorstenia brasiliensis <sup>24</sup> Dracontium croatii <sup>15,34</sup> Echinacea angustifolia <sup>15,43</sup> Echinacea pullid <sup>15</sup> Echinacea purpurea <sup>15,43,49</sup> Eclipta alba <sup>82</sup> Eclipta prostrate <sup>15,50,51,82</sup> Ehretia buxifolia <sup>82</sup> Ehretia canarensis <sup>19</sup> Elephantopus scaber <sup>24</sup> Emblica officinalis <sup>15,52</sup> Enicostemma axillare <sup>15</sup> Ensete edule <sup>81</sup> Equisetum giganteum <sup>15</sup> Erythrina excels <sup>82</sup>	Fabaceae         Moraceae         Araceae         Asteraceae         Asteraceae         Compositae         Asteraceae         Compositae         Asteraceae         Ehretiaceae         Boraginaceae         Asteraceae         Euphorbiaceae         Gentianaceae         Musaceae         Equisetaceae         Fabaceae         Papilioraceae	bark extract is effective against <i>B. jararacussu</i> & <i>Crotalus durissus</i> Plant Extracts are effective against snake venom Ethanolic extract of stem, Bark, ripe fruits, leaves are effective against <i>Bothrops atrox</i> Roots, Rhizomes Whole plant Aqueous extract are useful in <i>Bothrops asper</i> Paste of the whole plant is used Butanolic extract are active against Malayan pit viper, <i>Gloydius brevicaudus, G. shedaoensis, G. ussuriensis, Deinagkistrodon acutus</i> Root paste is applied externally Filtered infusion of grounded root bark works as an antidote for Russell Viper bite Plant Extracts are effective against snake venom Root extract are effective against cobra and viper Leaves Stem is used Rhizomes Juice & Paste of Bark is used Leafis used

125	Funhorbia hirta <sup>82</sup>	Funhorbiaceae	Whole plant Decoction is given orally
125	Euphoroid nind Evolvulus alsinoides <sup>81</sup>	Convoluylaceae	Leaves are used
120	Evolvatas aismonaes	Rutaceae	Root Juice is given Orally
127	Figure Jacor <sup>15</sup>	Moraçasa	L stev
120	Figus nymphagifolia <sup>15</sup>	Moraceae	Laura branches & shoots
129	Ficus nymphaeijolia	Moragona	Elaver
121	Calactia glaugeogeoge <sup>15</sup>	Aizonagag	
132	Gloriosa superb <sup>53,82</sup>	Liliaceae	Folklore use
132	Choing max <sup>82</sup>	Linaceae	Seed inice is given erally
133	Conzalagunia nanamongia <sup>15</sup>	Pubinggan	Leaves & branches
134	Guiara sanagalansis <sup>15,43</sup>	Combretaceae	Leaves & branches
135	Gumnama sulvastra <sup>15,82</sup>	Asclepiadaceae	Poots
127	Hadvotis pubarula <sup>19</sup>	Rubinanan	Root nasta administered erally works as antidate for
157	medyon's pubernia	Rublaceae	Cohra bite
138	Helianthus annuus <sup>82</sup>	Asteraceae	Seed Oil is applied externally
130	Heliconia curtispatha <sup>15,34</sup>	Heliconiaceae	Ethanolic extract of stem Bark rine fruits leaves are
157	menconia carrispaina	Treneomaceae	effective against <i>Bothrons atrox</i>
140	Hemidesmus indicus <sup>15,43,54,82</sup>	Apocynaceae	Methanolic extract of rootare useful in V russelli
140	Holarrhena nubescens <sup>81</sup>	Apocyanaceae	Stem Bark
141	Honneg dichotoma <sup>19</sup>	Gentianaceae	Root powder decoction externally & internally work as
142	Поррей исполоти	Gentianaceae	an antidote for
			Bungarus fasciatus bite
143	Hugonia mystax <sup>19</sup>	Hugoniaceae	Root paste with garlic paste is antidote for Pit viper hite
144	Humirianthera ampla <sup>55</sup>	Icacinaceae	Root extract are useful against snake venom
145	Hypericum brasiliense <sup>56</sup>	Guttiferae	Plant extract are effective against <i>B jararaca</i>
146	Hyptis capitata <sup>15</sup>	Lamiaceae	Leaves branches & stem
147	Impatiens balsamina <sup>15</sup>	Balsaminaceae	Flowers
148	Inomoea cairica <sup>15</sup>	Convolvulaceae	Leaves branches & stem
140	Jatropha curcas <sup>57</sup>	Euphorbiaceae	Root extract are useful against snake venom
150	Justicia tranquebariensis <sup>19</sup>	Acanthaceae	Leaf juice is administered orally & leaf naste externally
150	Justicia il anquebal tensis	Acanthaceae	on the sight of snake bite work as an antidote for Cobra
			hite
151	Lantana indica <sup>19</sup>	Verbenaceae	Leaf juice administered orally work as an antidote for
151	Lumana marca	verbenaeede	Russell Viner hite
152	Leucas aspera 58	Lamiaceae	Plant extract are useful against snake venom
152	Leucas cephalotes <sup>82</sup>	Lamiaceae	Lamiaceae Leaf Past/Juice given orally
154	Leucas linifolia <sup>15</sup>	Labiatae	Whole plant
155	Lobelia nicotianifolia	Compunalaceae	Leaves are used
156	Luffa cylindrica <sup>19</sup>	Cucurbitaceae	Leaf juice administered orally works as an antidote for
100	Eligia egintariea	Cuturonateur	Pit viper bite
157	Lysimachia nummularia <sup>15</sup>	Primulaceae	Plant extract
158	Madhuca longifoila <sup>82</sup>	Sapotaceae	Nut Paste is applied externally
159	Mandevilla illustris <sup>15</sup>	Apocynaceae	Plant extract
160	Mangifera indica 59,60	Anacardiaceae	Ethanolic extract of seed kernel are effective in Thai
			cobra, Malayan pit viper, C. rhodostoma, N. naja
161	Marsypianthes chamaedrys 15,24	Lamiaceae	Plant Extracts are effective against snake venom
162	Melianthus major <sup>15</sup>	Melianthaceae	Flowers
163	Mikania glomerata <sup>15,61</sup>	Asteraceae	Aqueous extract are effective against C. durissus
164	Mimosa pudica <sup>15,62,63,82</sup>	Mimosaceae	Aqueous extract of dried root are active against N.
	1		naja, B. caerulus, N. naja kaouthia, Ophiophagus
			hannah, Bungarus candidus, B. fasciatus, C.
			rhodostoma
165	Momordica charantia 82	Cucurbitaceae	Flower Paste with olive oil applied externally
166	Moringa oleifera <sup>15,82</sup>	Moringaceae	Shoot, leaves
167	Morus alba <sup>82</sup>	Moreaceae	Leaf Juice is given Orally
168	Mouriri pusa 37	Melastomataceae	Plant extract are effective against Bothrops jararaca
169	Mucuna pruriens <sup>15,64,65,66,67</sup>	Fabaceae	Aqueous seed extract are effective against cobra, viper,
			E. carinatus, Naja sputatrix, Calloselasma rhodostoma,
	10		Bangarus caerulus
170	Murraya paniculata <sup>19</sup>	Rutaceae	Infusion prepared from shadily dried root powder is
L	1520.00		administered orally in Cobra bite
171	Musa paradisiaca 13,08,82	Musaceae	Juices effective against crotalidae venoms
172	Naringi crenulata <sup>17</sup>	Rutaceae	Oral administration of root paste with cow urine is
	NY 1 15		remedy for Cobra bite
173	Nerium indicum <sup>13</sup>	Apocynaceae	Leaves
174	Neolamarckia cadamba <sup>17</sup>	Kubiaceae	Stem bark infusion is administered orally works as an
1.7.5	<b>b</b> T · <b>1</b> 7 82		antidote for <i>Bungarus caeruleus</i> bite
175	Nerium odorum <sup>11,02</sup>	Apocynaceae	Plant extract are effective against snake Venom
176	Neurolaena lobata	Asteraceae	Leaves, branches & stem
177	Ivicotiana tabacum	Solanaceae	Leaves Decoction Urally
178	Ochna obtusata	Ochnaceae	Ural administration of root paste is prescribed in Cobra
170	Opinum kariling 82	T	Ulle Whate short Depending size Q 11
1/9	Ocimum basilicum	Lamiaceae	Vilore plant Decocuon given Orally
180	Ocimum micranthum	Lamiaceae	Leaves, branches & stem
	Comum sanchum	Ladiateae	Leaves

182	Oldenlandia corvmbosa <sup>15</sup>	Rubiaceae	Plant extract
102	Oldenlandia diffuga <sup>82</sup>	Bubiaccae	Whale plant Degte applied externally
105	Oldenianala alijusa	Rublaceae	
184	Oldenlandia umbellate	Rubiaceae	Leaf or Root Paste is applied externally
185	Ophiorrhiza mungo <sup>15, 82</sup>	Rubiaceae	Roots
186	Opilia amentacea <sup>19</sup>	Opiliaceae	Oral administration of root paste is an antidote for
			Bungarus caeruleus bite
187	Origanum dictamnu <sup>15</sup>	Lamiaceae	Seeds
188	Papaver somniferum <sup>15</sup>	Papaveraceae	Plant extract
180	Paris polyphylla <sup>15</sup>	Melanthiaceae	Poots
109	$D$ $L^2$	Melantinaceae	
190	Parkia biglobosa	Mimosaceae	Stem bark extract are effective against <i>Naja nigricollis</i> ,
			<i>Echis ocellatus</i>
191	Passiflora quadrangularis	Passifloraceae	Leaves & branches
192	Pavetta breviflora <sup>81</sup>	Rubiaceae	Bark is used
193	Pentaclethra macroloba <sup>15</sup>	Fabaceae	Plant extract
194	Philodendron tripartitum <sup>15</sup>	Araceae	Shoot, leaves
195	Phyllanthus emblica 18,82	Euphorbiaceae	Plant Extracts are effective against snake venom
106	Phyllanthus nimuri <sup>18,82</sup>	Euphorbiaceae	Plant Extracts are effective against snake venom
190	Dhullanthus net indates <sup>82</sup>	Euphorbiaceae	
197	Phylianthus reticulates	Euphorbiaceae	Leaf infusion given Orally
198	Piper arboretum "	Piperaceae	Leaves & branches
199	Piper nigrum <sup>82</sup>	Piperaceae	Flower Paste is given with ghee orally
200	Piper pulchrum <sup>15</sup>	Piperaceae	Leaves, branches & stem
201	Pittosporum neelgherrense <sup>70</sup>	Pittosporaceae	extract are effective against Naja nigricollis, Echis
			ocellatus
202	Pleopeltis percussa <sup>15,34</sup>	Polypodiaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
		••	effective against Bothrops atrox
203	Pluchea indica 71,72,82	Asteraceae	Root extract is useful in viner venom
204	Polyalthia korinti <sup>19</sup>	Annonaceae	Oral administration of root powder decoction is an
204	1 Siyunnu Kormu	1 Minoriaceae	antidate for Pussell Vinor bito
205	Debes when we was in 19	D-1	Deste of end also plant is a definition of the line of
205	Polygala arvensis	Polygalaceae	Paste of whole plant is administered orally in Russell
	15		Viper bite
206	Prenanthes alba <sup>15</sup>	Asteraceae	Leaves are used
207	Pseudelephantopus spicatus <sup>15</sup>	Asteraceae	Whole plant is used
208	Psoralea corvlifolia <sup>15</sup>	Fabaceae	Seeds are used
209	Pouzolzia indica <sup>81</sup>	Urticaceae	Whole plant is used
210	Punica granatum <sup>81</sup>	Punicaceae	Whole plant is used
210	Parkanua antinua <sup>15</sup>	Draggiog age a	Tubor is used
211	Raphanus salivus	Blassicaceae	
212	Rauwolfia serpentine	Apocynaceae	Whole plant is used
213	Renealmia alpinia	Zingiberaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
			effective against Bothrops atrox
214	Rhizoma paridis <sup>15</sup>	Liliaceae	Root is used
215	Sapindus emarginatus <sup>82</sup>	Sapindaceae	Bark Paste given Orally
216	Schizolobium parahyba <sup>15,73</sup>	Caesalpiniaceae	Aqueous extractis useful in B. pauloensis, C. durissus
	1 2	1	terrificus
217	Schumanniophyton magnificum	Rubiaceae	Bark extracts are useful against snake venom
	15,74	1100100000	Durit entrates are aserar against share venom
219	Soowidaaa longinadungulata 43	Polymodeasea	Poot is used
210	Securitated iongipedanculata		What a start
219	Selaginella articulata	Selaginellaceae	
220	Semicarpus anacardium <sup>62</sup>	Anacardiaceae	Root given orally
221	Senna dariensisida <sup>15</sup>	Fabaceae	Whole plant
222	Sida acuta <sup>15,34</sup>	Malvaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
			effective against Bothrops atrox
223	Sideritis mugronensis <sup>75</sup>	Lamiaceae	Hypolaetin-8-glucoside, a novel flavonoid shows anti-
	Ĭ		venom activity
224	Siparuna thecaphora <sup>15</sup>	Siparunaceae	Leaves branches & stem
227	Solanum torsum <sup>82</sup>	Solanaceae	Flower Paste applied External
223	Staraosparmum colais <sup>19</sup>	Bignoniagogo	Poot pagta is orally in Cohra hito
220	Stereospermum coluis	A no sympositi	Leaving are used
227	Siropnaninus gratus	Аросупасеае	Leaves are used
228	Strophanthus hispidus	Apocynaceae	Leaves are used
229	Struthanthus orbicularis <sup>15,34</sup>	Loranthaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
			effective against Bothrops atrox
230	Strychnos nuxvomica 15,82	Loganiaceae	Seeds
231	Strychnos pseudoquina 37	Loganiaceae	Plant extract are effective against Bothrops jararaca
232	Strychnos xinguensis <sup>15</sup>	Loganiaceae	Stem leaves branches
233	Symplocos recemosa 76	Symplocaceae	Extracts are effective against Snake Venom
233	Symptotos recentosu	Murtagaga	Stam hark Deposition is given arally
234	Tabahain mulling 15	Dignomia	Derle
255	Tabebula aveilanedae	Dignoniaceae	
236	Tabebuia rosea	Bignoniaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
L			effective against Bothrops atrox
237	Tabernaemontatna catharinesis <sup>15</sup>	Apocynaceae	Plant extract
238	Tamarindus indica <sup>15,43,77</sup>	Leguminosae	seed extract are effective against V. russelli
239	Teprhosia purpurea <sup>82</sup>	Leguminosae	Root Decoction is given Orally
240	Terminalia ariuna <sup>82</sup>	Combretaceae	Bark Paste applied External
240	Thea sinensis 43	Theorema	
241	Theu sinensis		What a short being all and the
242	Inymus vulgaris	Lamiaceae	whole plant Juice given Orally
243	Tragia involucrate ° <sup>2</sup>	Euphorbiaceae	Whole plant Juice is given orally

244	Trianosperma tayuya <sup>24,43</sup>	Cucurbitaceae	Plant Extracts are effective against snake venom
245	Trichodema zeylanicum <sup>82</sup>	Boraginaceae	Root Aqueous extract Oral and External
246	Trichomanes elegans 15,34	Hymenophyllaceae	Ethanolic extract of stem, Bark, ripe fruits, leaves are
			effective against Bothrops atrox
247	Tylophora indica <sup>19</sup>	Asclepiadaceae	Leaf juice and root paste are administered orally for
			Russell Viper bite
248	Tylophora longifolia <sup>82</sup>	Asclepiadaceae	Leaf Flower
249	Ulmus rubra <sup>15</sup>	Ulmaceae	
250	Vicoa indica <sup>19</sup>	Asteraceae	Root paste is administered orally and also root is Kept
			as an amulet work as an antidote for Pit viper bite
251	Viscum articulatum <sup>81</sup>	Loranthaceae	Aerial parts
252	Vitex negundo <sup>15,82</sup>	Lamiaceae	Roots
253	Vitis vinifera <sup>15,78,79</sup>	Vitaceae	Methanol extract of seeds are
			effective against Indian Daboia / Vipera russelli, Echis
			carinatus
254	Wattakaka volubilis <sup>19</sup>	Asclepiadaceae	Leaf juice and root paste are administered orally in
			Russell Viper bite
255	Wedelia calendulae <sup>82</sup>	Asteraceae	Leaf Juice given Internally
256	Withania somnifera <sup>43</sup>	Solanaceae	Root is used
257	Woofordia fruticosa <sup>15</sup>	Lythraceae	Whole Plant is used
258	Xanthium sibiricum <sup>15</sup>	Compositae	Leaves are used

#### DISCUSSION:

Snake bite is one of the major socio-medical problems in rural areas of tropical countries, especially in India. Devastation of forest results in the decrease of snake habitat. Their adaptation to living surrounding us promotes the accident of snakebite. The true global incidence of snakebite and associated mortality are difficult to estimate.

Plants are used either single or in combination as antidotes for snake envenomation by rural populations in India and in many parts of the world since time immemorial. A review of literature on the subject of to management of snake bite makes interesting reading, mostly in respect to traditional methods. In modern medicine anti-venom therapy discovered by Calmette in 1894 remains as antidote for snake venom poisoning. There are about 2,50,000 - 5,00,000 varieties of plants found worldwide, out of which more than 25% are known to have medicinal values. The numbers of studies evaluating the pharmacologically active principles against snake bites are few.

The present paper includes information on 258 plants used traditionally for Snake bite. Certain pure compounds have already been isolated, which have been reported to possess anti-snake venom activity. These herbs are commonly administered in forms are like infusion, juice, extract, powder, paste, poultice, latex and oil and in most of the cases the dosage is oral and in some plants, external application is also suggested. The method of preparation and mode of action is also simple and convenient. The plants used by the traditional healers against snakebite have been found to possess remarkable properties. These traditional healers prefer to keep this knowledge with them for their own profit. Data is always lost without any records after their passing away. These can be inferred from the critical examination and observations of ethno medicinal plants growing in surroundings. Apart from individual plants or their pure compounds, polyherb combination drug therapy may also be prescribed. Blending these herbs with anti-snake venom may also be a good perspective and question for the research in future.

### CONCLUSION:

Several herbal medicines are being used traditionally in the management of Snake bite. Plants are reputed to neutralize the action of snake venom, with a plethora of plants claimed to be antidotes for snake bites in folk medicine (Kirtikar and Basu, 1975). Though the data indicates great importance of indigenous knowledge in therapeutic uses particularly in cases of snake bite, but still a great precaution should be taken as snake bite may also be a devastating condition and needs emergency management as fatality depends on various factors. It is necessary to investigate, whether the mechanism of action employed in antagonizing snake venom is same as in antagonizing other systemic actions. In spite of having enormous data on the subject, certain aspects of it still need a further probe. Substantial amount of clinical trials with respect to herbals against snake bites is required. Further studies of these herbs for their chemical contents and toxicity, if any, may help to increase efficacy vis-à-vis authenticity of the claims.

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