

**PISCICIDAL PLANTS OF INDIA****Jawale C.S.**

P.G. Dept of Zoology, Life Science Building, H.P.T Arts and R.Y.K. Science College, Nashik 422005. (M.S.), India.

E-mail: [csjawale@hotmail.com](mailto:csjawale@hotmail.com)**ABSTRACT**

A list of 307 species of Indian piscicidal plants is presented in alphabetical order of families and 208 genera with detail biological names, their part used for fish poisoning with bibliographic records. Only 30 plants species among all these plants are reinvestigated in laboratory with various trash fish species, rest are all of ethno-botanical importance. Fabaceae has 31 plants species, Euphorbiaceae with 24 plants and Apocynaceae with 17 plant species in decreasing order among all 307 Indian piscicidal plants. Prominent phytochemicals are also discussed with other piscicidal principals.

**KEYWORDS:** alkaloids, Ethnobotanical, Euphorbeacea, fabeaeasa, Fish poison, Ichthyotoxins, Piscicidal plant, rotenone, saponin, sapindaceae, tannins.

**INTRODUCTION**

A piscicide is a chemical substance, which stupefy and or poison the fish. These are chemicals poisonous to fish. The primary use for piscicides is to eliminate a dominant species of fishes from the water bodies, before adding the new lots of fishes from different species previously present trash or unwanted fishes are to be removed from such ponds. They are also used to eradicate parasitic and invasive species of fish. In Many ethnobotanical articles, they mentioned varied method of use and part of these piscicidal plants. In case of stem and root bark, it is beaten or crushed in the stagnant or flowing water, or used as powder after drying. When leaves are to be used, it is by crushing in the form of pest is released in to the water, fruit and fruit sap is used in the form of pulp or crushing. Sometime entire bushes like plants are used in crushed form to kill or stupefy fishes. (Lamba, 1970, Ramanujam and Ratha, 1980, Singh and Singh, 2002).

Plants and there parts have been used in various regions of the world by primitive people from times immemorial for poisoning or stupefying fish (Heizer. 1953). Historically, fishing techniques of indigenous and tribal people around the world have frequently included the use of plant-based piscicides. Such plants have also been widely used by traditional societies all over the world as a means of catching fish. Across the world, many botanical families are implicated in fishing by poison (Acevedo-Rodríguez, 1990). This practice of poisoning the water in bodies rich in fish secures availability of large quantity of food with relatively little efforts. These piscicidal plants do not make these fishes poisonous or unwholesome as food article, although a tendency to prettify sooner is notices in some instance. The appropriate use of these plants, consist parts of plant, method of application, time and duration of fish catching varies greatly among the plant species (Archer. 1934, Killip & Smith. 1935, Prance. 1972, Moretti & Gnard. 1982). This practice is one of the remarkable biological and ethnological interests and has attracted the attention of both scientist and phytochemist of world. In recent times many ethno botanical plants showing fish stupefying effects are evaluated for their phytochemicals, and found a correlation of certain chemical group with piscicidal activity. Whereas diverse biological and biocidal activities of such piscicidal plants are also reported by many researches (Patole *et al.*, 2008, Jawale and Dama, 2012). These phytochemical and biological activities potentiated the exploration of such plants in depth.

At present the piscicidal plants, there ethno botanical information, is being collected from various parts of India and published well (Sinha *et al.*, 2010; Satya and Solanki, 2010; Rai and Lalramnghinglova 2010; Pawar *et al.*, 2004). Still this information is in scattered form and less priority has been given to the systematic and comprehensive enumerations of these plant species. Very few efforts have being taken to reinvestigate them in laboratory (Bhatt, 1992; Kumar *et al.*, 2010; Jawale, 2016 A, B.). Hence, as attempt is made to document and enumerate the Indian piscicidal plants with existing traditional uses, practices, and laboratory investigations in details. Extensive literature survey was undertaken to collect these piscicidal plant information, but still it need to be updates as many research articles are beyond the reach. This information is presented here with reference to plant family, there species name, part

of plant used with extensive bibliography. Further emphasis has been given on the piscicidal plants that reinvestigated in laboratory along with fish species used and bioassay information.

**Table 1: List of Indian piscicidal plants with Family, biological name, part of plant used for fish poisoning.**

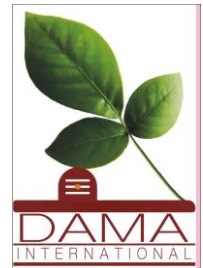
Family	Biological name		Part of plant Used	Reference
Acanthaceae	<i>Adhatoda vasica</i>	Nees.	leaves	Petr (1999),
Achariaceae	<i>Hydrocarpus pentandra</i>	(Buch.-Ham.) Oken	Leaves, fruit,	Chopra and chopra (1933),
Agavaceae	<i>Agave americana</i>	Linn..	leaves	Petr (1999), Envis (2017), Nagi and Kanwal (2009),
	<i>Yucca aloifolia</i>	Linn.	NR	Sinha and Munshi (2010),
	<i>Yucca filamentosa</i>	Linn.	NR	Sinha and Munshi (2010),
Alangiaceae	<i>Alangium salvifolium</i>	Linn..	Root bark,	Agarkar (1991),
Amaranthaceae	<i>Achyranthes aspara</i>	Linn..	Leaves, stem, roots, seeds,	Sinha and Munshi (2010), Ashraf <i>et al.</i> , (2010),
	<i>Alternanthera philoxeroides</i>	Griseb.	Stem leaves	Sinha and Munshi (2010),
	<i>Parthenium spp.</i>		Root	Ashraf <i>et al.</i> , (2010),
Amaryllidaceae	<i>crinum asiaticum</i>	Linn.	Root, leaves,	Pedro (1990),
	<i>Haemanthus kalbreyeri</i>	Baker.	bulb	Chopra and chopra (1933), Ambasta (2006),
Anacardiaceae	<i>Anacardium occidentale</i>	Linn.	NR	Agarkar (1991), Bombay (1953),
	<i>Lanea coromandelica</i>	Houtt.	fruit	Heda and Kulkarni (2009),
	<i>Semecarpus anacardium</i>	Linn.	NR	Agarkar (1991),
Apiaceae	<i>Centella Asiatica (Linn..)</i>	Linn.	NR	Chopra and Chopra (1933),
	<i>Hydrocotyle asiatica</i>			
	<i>Hydrocotyle javanica</i>	Thumb.	NR	Colonel <i>et al.</i> , (1955),
Apocynaceae	<i>Adenium obesum</i>	Roem & Schett.	Bark, leaves,	Vardhana (2006),
	<i>Allamonda cathartica</i>	Linn..	Stem, bark,	Sinha and Munshi (2010),
	<i>Alstonia scholaris</i>	Linn.	latex	Bandaru <i>et al.</i> , (2016),
	<i>Cerbera odollam</i>	Gaertn.	NR	Agarkar (1991),
	<i>Cerbera manghas</i>	Linn.	NR	Colonel <i>et al.</i> , (1955),
	<i>Melodinus monogynus</i>	Roxb.	NR	Chopra and Chopra (1933),
	<i>Nerium indicum</i> Synm <i>N.odorum</i>	Mill.	Leaf, fruit, bark,	Sinha and Munshi (2010), Singh and Singh (2002), Tiwari and Singh (2003), Bombay (1953), Pedro (1990),
	<i>Nerium oleander</i>	Linn.	Leaf, fruit, bark,	Ashraf <i>et al.</i> , (2010),
	<i>Plumeria acuminata</i> Symm. <i>P. acutifolia</i> (Poir.)	Ait.	NR	Agarkar (1991),
	<i>Rauwolfia serpentina</i>	Benth.	Stem, leaves,	Sinha and Munshi (2010), Pedro (1990),
	<i>Thevetia peruviana</i> (Pers. Merr.) Synm. <i>T. Nerifolia</i>	Juss.	Pericarp, stem, leaf, bark	Envis (2017), Singh <i>et al.</i> , (2010), Singh and Singh (2002), Singh <i>et al.</i> , (2010), Singh <i>et al.</i> , (2010),
	<i>Amorphophallus campanulatus</i>	Blume.	Corn	Agarkar (1991),
	<i>Legenandra ovata</i> (Linn..) synoname <i>Lagenandra toxicaria</i>	Dalz.	NR	Agarkar (1991),
	<i>Arenga obtusifolia</i>	Mart	NR	Chopra and Chopra (1933),
	<i>Arisaema tortuosum</i>	(Wall.) Schott	tuber	Gairola & Biswas (2008),
	<i>Corypha umbraculifora</i>	Linn..	Fruit,	Pedro (1990), Ramanayaka and Atapattu (2006),,
	<i>Corypha lecontei</i>	Becc	fruit	Pedro (1990),
Aristolochiaceae	<i>Apoma tomentosa</i>	Engl.	NR	Chopra and Chopra (1933),
Asclepiadaceae	<i>Calotropis procera</i>	Aiton.	Root, latex	Ashraf <i>et al.</i> , (2010), Katewa <i>et al.</i> , (2008),,
	<i>Didymocarpus pedicellata</i>	Roxb.	leaves	Ambasta (2006),
	<i>Asclepias curassavica</i>	Linn.	NR	Envis (2017), Jawale (2016 B),
Asteraceae	<i>Adenophyllum spp.</i>		leaves	Ashraf <i>et al.</i> , (2010),
	<i>Ageratum conyzoides</i>	Linn..	Whole plant, leaves,	Tag <i>et al.</i> , (2005), Das <i>et al.</i> , (2003),
	<i>Artemisia vulgaris</i>	Linn.	Leaves, bark	Chopra and Chopra (1933), Pedro (1990),
	<i>Blumea balsamifera</i>	Linn.	Leaves	Envis (2017),
	<i>Eupatorium odoratum</i>	Linn.	Leaves	Envis (2017), Lamba (1970), Pedro (1990), Ramanujam and Ratha (1980), Malla and Chhetri (2011),
	<i>Sphaeranthus indicus</i>	Linn.	Whole plant, seeds, leaves,	Envis (2017), Pedro (1990), Patole <i>et al.</i> , (2008),
	<i>Spilanthes paniculata</i>	Wall.	NR	Malla and Chhetri (2011),
	<i>Spilanthes oleracea</i>	Murr.	Whole plant, leaves, young twigs,	Tag <i>et al.</i> , (2005), Namsa <i>et al.</i> , (2011), Nimachow <i>et al.</i> , (2008),
<i>Tridax procumbens</i>	Linn.	Leaf,	Ambasta (2006),	
Balanitaceae	<i>Balanites aegyptiaca</i> Sy of <i>B. Roxburghii</i>	Delile.	Bark, fruit, stem, root,	Rai and Lalramghinglova (2010), Neelima <i>et al.</i> , (2011), Joshi (1986),
	<i>Balanites roxburghii</i>	Planch.	Stem, fruit	Rai and Lalramghinglova (2010), Pedro (1990),
Berberidaceae	<i>Berberis aristata</i>	D.C.	NR	Chopra and Chopra (1933),
Bignoneaceae	<i>Dolichandrone falcata</i>	Seem.	Bark,	Nadkarni (1996), Pedro (1990),

	<i>Oroxylum indicum</i>	Benth.	Root bark,	Seshadri & Viswanadham (1947),
Bixaceae	<i>Hydnocarpus laurifolia</i>	Denn.	NR	Agarkar (1991), Pedro (1990),
Brassicaceae	<i>Cardaria draba</i> (Linn.) Synoname <i>Lepidium draba</i>	Linn.	NR	Colonel <i>et al.</i> , (1955), Pedro (1990),
Burseraceae	<i>Garuga pinnata</i>	Roxb.	Stem bark	Joshi (1986),
Caesalpiniaceae	<i>Caesalpinia nuga</i>	Linn.	Pulped fruit, stem,	Chopra and chopra (1933), Lamba (1970), Pedro (1990),
	<i>Cassia absus</i>	Linn.	NR	Colonel <i>et al.</i> , (1955),
	<i>Cassia alata</i>	Linn.	Leaf	Ayyanar & Tgnacimuthu (2010), Colonel <i>et al.</i> , (1955),
	<i>Cassia auriculata</i>	Linn.	Stem bark,	Joshi (1986),
	<i>Cassia fistula</i>	Linn.	Stem bark,	Sinha and Munshi (2010), Ayyanar <i>et al.</i> , (2010),
	<i>Cassia sophora</i>	Linn.	NR	Sinha and Munshi (2010),
	<i>Tamarindus indica</i>	Linn.	Seed husk	Singh (1988),
Celastraceae	<i>Cassine albens</i>	Retz.	bark	Pawar <i>et al.</i> , (2004),
Cannabinaceae	<i>Cannabis sativa</i> <i>Syn cannabium sativum</i>	Linn.	leaf	Ashraf <i>et al.</i> , (2010), Pedro (1990), Satya and Solanki (2010),
Capparidaceae	<i>Capparis decidua</i>	Edgew.	NR	Kulkarni <i>et al.</i> , (1990),
	<i>Capparis stylosa</i> , synonym of <i>C. divaricata</i> (Lam)	DC	root	Ayyanar <i>et al.</i> , (2010), Ambedkar & Muniyan (2009),
	<i>Gynandropsis gynandra</i> Synoname <i>Gynandropsis pentaphylla</i>	Linn.	Seed oil	Borgio <i>et al.</i> , (2008)
Clusiaceae	<i>Kayea assamica</i>	King & Prain.	fruit	Ambasta (2006), Chopra and chopra (1933),
Cobretaceae	<i>Terminalia alata</i> (Heybe.) Symm. T. <i>tomentosa</i>	Linn.	NR	Sinha and Munshi (2010),
	<i>Terminalia bellerica</i>	Roxb.	Kernel, bark,	Pedro (1990), Chopra and Chopra (1933),
	<i>Terminalia arjuna</i>	Roxb.	Stem bark	Joshi (1986),
Combretaceae	<i>Calycoperis floribunda</i>	Lam.	leaves	Seshadri & Viswanadham (1947),
Companulaceae	<i>Platycodon grandiflorum</i>	A.D.C.	root	Ambasta (2006),
Convolvulaceae	<i>Cuscuta reflexa</i>	Roxb.	NR	Malla and Chhetri (2011),
	<i>Ipomea carnea</i>	Jacq.	leaves	Hazarika <i>et al.</i> , (2015), Wanule and Balkhande (2012),
	<i>Ipomoea fistulosa</i>	Mart.	Aerial parts	Sinha and Munshi (2010),
Dilleniaceae	<i>Tetracera indica</i>	Merrill.	NR	Ambasta (2006),
Dioscoreaceae	<i>Dioscorea esculanta</i>	Lour.	NR	Malla and Chhetri (2011),
	<i>Dioscorea frazeri</i>	Burkill.	Rhizome	Pedro (1990),
Dipterocarpaceae	<i>Shorea robusta</i>	Gaertn.	Stem bark,	Mishra <i>et al.</i> , (2014),
Ebenaceae	<i>Diospyros cordifolia</i>	Roxb.	fruit	Sinha and Munshi (2010),
	<i>Diospyros ebenum</i>	Koen.	NR	Chopra and chopra (1933), Pedro (1990),
	<i>Diospyros montana</i>	Roxb.	Leaves, fruit	Narayanan <i>et al.</i> , (2011), Kulkarni <i>et al.</i> , (1990), Pedro (1990),
	<i>Diospyros paniculata</i>	Dalz.	Leaves, fruit	Chopra and chopra (1933), Nadkarni (1996), Pedro (1990),
	<i>Diospyros sylvatica</i>	Roxb.	leaf	Das <i>et al.</i> , (2003),
	<i>Diospyros toxicaria</i>	Gray.	NR	Pedro (1990),
Ericaceae	<i>Lyonia ovalifolia</i>	Wall.	leaves	Nagi and Kanwal (2009),
	<i>Rhododendron anthopogon</i>	Don.	NR	Colonel <i>et al.</i> , (1955),
	<i>Rhododendron barbatum</i>	Wall.	NR	Pedro (1990),
	<i>Rhododendron falconeri</i>	Hook.	Flowers bud	Lamba (1970), Pedro (1990),
Euphorbiaceae	<i>Baliospermum montanum</i>	Muell.	Seeds, fruit	Rai and Lalramghinglova (2010), Pedro (1990),
	<i>Chrozophora rotleri</i>	Geiseler	leaves	Joshi (1986),
	<i>Cleistanthus collinus</i>	Benth.	Young tender shoot, fruit, bark,	Heda and Kulkarni (2009), Kala (2009), Nadkarni (1996), Pedro (1990), Satya and Solanki (2010),
	<i>Croton oblongifolius</i>	Roxb.	Seeds,	Ambasta (2006),
	<i>Croton tiglium</i>	Linn.	Seed, inflorescence	Tag <i>et al.</i> , (2005), Nadkarni (1996), Ramanujam and Ratha (1980),
	<i>Drypets confertiflora</i>	Rox. & Haffin.	fruit	BSI (2018),
	<i>Euphorbia antiquorum</i>	Linn.	Whole plant	Satya and Solanki (2010), Ramanayaka and Atapattu (2006),
	<i>Euphorbia helioscopia</i>	Linn.	latex	Ambasta (2006),
	<i>Euphorbia lathyris</i>	Linn.	Capsules	Ambasta (2006),
	<i>Euphorbia mellifera</i>	Aiton.	NR	Pedro (1990),
	<i>Euphorbia nerifolia</i>	Linn.	Whole plant, latex,	Das <i>et al.</i> , (2003),
	<i>Euphorbia royleana</i>	Boiss	Latex, leaf, stem, bark,	Maniram <i>et al.</i> , (2010), Singh and Singh (2002), Nagi and Kanwal (2009), Pedro (1990),
	<i>Euphorbia tirucalli</i>	Linn.	Latex,	Kumar <i>et al.</i> , (2010), Tiwari and Singh (2006), Kulkarni <i>et al.</i> , (1990), Nadkarni (1996),
	<i>Excoecaria agallocha</i>	Linn.	bark	Chopra and Chopra (1933),
	<i>Excoecaria cochinchinensis</i>	Lour.	latex	Ambasta (2006), Chopra and Chopra (1933),
	<i>Jatropha curcas</i>	Linn.	NR	Chopra and Chopra (1933),

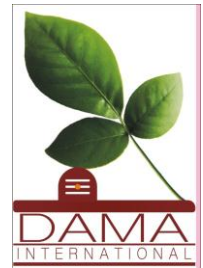
	<i>Jatropha gossypifolia</i>	Linn.	Leaf, stem, bark,	Singh and Singh (2002),
	<i>Jatropha multifodia</i>	Linn.	NR	Agarkar (1991),
	<i>Phyllanthus urinaria</i>	Linn.	NR	Envis (2017),
	<i>Ricinus communis</i>	Linn.	Leaf, seed	Ashraf <i>et al.</i> , (2010), Pedro (1990),
	<i>Sapium indicum</i>	Wild.	Seeds, fruit,	Chopra and Chopra (1933), Pedro (1990),
	<i>Sapium insigne</i>	Trimen	Leaves, latex,	Nagi and Kanwal (2009), Petr (1999), Kulkarni <i>et al.</i> , (1990),
	<i>Securinega leucopurus</i> (Wild.) Synoname <i>Flueggea leucopyrus</i> (Wild.)	Wild	Stem bark	Ambasta (2006),
	<i>Securinega virosa</i>	Roxb.	Bark	Chopra and Chopra (1933), Agarkar (1991),
Fabaceae	<i>Crotalaria spp.</i>	Linn.	Leaves	Ramanayaka and Atapattu (2006),
	<i>Derris grandifolia</i> synonym of <i>Piscidia grandifolia</i> .	Donn.Sm.	Arial portion	Lamba (1970),
	<i>Dalbergia stipulacea</i>	Roxb Bennth	Bark, stem, roots,	Petr (1999), Envis (2017),
	<i>Derris cuneifolia</i>	Benth	Roots, fruit,	Ambasta (2006),
	<i>Derris elliptica</i>	Benth.	Bark, roots, seeds, stem,	Nadkarni (1994), Lamba (1970), Nadkarni (1996),
	<i>Derris ferruginea</i>	Benth.	Roots,	Envis (2017), Lamba (1970), Pedro (1990),
	<i>Derris trifoliata</i>	Lour.	Leaves, stem, root,	Bhagya and Sridhar (2009), Lamba (1970),
	<i>Derris indica</i>	Lamk.) Bennet	Seeds	Joshi (1986),
	<i>Derris malaccensis</i>	Prair	Leaves, roots,	Chopra and Chopra (1933), Lamba (1970), Pedro (1990), Ambasta (2006),
	<i>Derris polyantha</i>	Perkins	Root,	Pedro (1990),
	<i>Derris uliginosa</i> synonym of <i>Derris trifoliata</i> Lour..	Willd.	bark	Nadkarni (1996),
	<i>Entada Scandens</i> Sy. <i>E. pusaeth</i>	Benth.	seeds	Nadkarni (1996),
	<i>Erythrina suberosa</i>	Roxb	BARK	Pawar <i>et al.</i> , (2004),
	<i>Millettia extensa</i> Synm. <i>M. auriculata</i>	Benth. Baker	Roots	Envis (2017), Mishra <i>et al.</i> , (2014), Joshi (1986),
	<i>Millettia pachycarpa</i>	Benth.	Roots, seeds	Envis (2017), Lamba (1970), Pedro (1990), Ramanujam and Ratha (1980),
	<i>Mundulea sericca</i> Synm. <i>M.suberosa</i> (Benth.)	Wild.	Seeds, roots	Chopra and Chopra (1933), Lamba (1970), Singh (1988), Kulkarni <i>et al.</i> , (1990), Pedro (1990),
	<i>Millettia atropurpurea</i> Benth. Synm. <i>Callerya atropurpurea</i> (Wall.)	Wall.	NR	Nadkarni (1996),
	<i>Ougenia oojenensis</i> Synm. <i>O.dalbergioides</i> (Benth)	Roxb.	Leaf, bark, stem,	Sinha and Munshi (2010), Chopra and Chopra (1933), Lamba (1970), Kulkarni <i>et al.</i> , (1990), Kala (2009), Mishra <i>et al.</i> , (2014), Joshi (1986), Pedro (1990), Satya and Solanki, (2010),
	<i>Ormocarpum cochinchinensis</i>	Memill.	root	Ambasta (2006),
	<i>Pithecellobium bigeminum</i>	Linn.	Leaves, bark, seeds,	Petr (1999), Lamba (1970),
	<i>Pterocarpus marsupium</i>	Roxb	Bark	Heda and Kulkarni (2009),
	<i>Rhynchosia minima</i>	D.C.	Seeds,	Ambasta (2006),
	<i>Tephrosia candida</i>	D.C.	Leaves, seeds,	Envis (2017), Tag <i>et al.</i> , (2005),
	<i>Tephrosia grandiflora</i>	Pers.	Roots,	Ambasta (2006),
	<i>Tephrosia incana</i>	Grah	NR	Ambasta (2006),
	<i>Tephrosia lonceolata</i>	Grah	root	Ambasta (2006),
	<i>Tephrosia noctiflora</i>	Bajer	NR	Ambasta (2006),
	<i>Tephrosia singapou</i>	Buchoz.	root	Ambasta (2006),
	<i>Tephrosia vogelii</i>	Hook	Seed, leaves, roots,	Ambasta (2006),
	<i>Uroria crinita</i>	Desv.	leaves	Ambasta (2006),
	<i>Pachyrrhizus erosus</i>	Linn.	Seeds,	Ambasta (2006),
	<i>Pongamia globra</i>	Linn.	Roots	Lamba (1970), Pedro (1990),
	<i>Castanopsis indica</i>	D.C.	Leaves, stem, bark,	Namsa <i>et al.</i> , (2011)
Flacourtiaceae	<i>Casearia elliptica</i>	Wild.	Leaves, fruit,	Pattanaikl <i>et al.</i> , (2007), Nagi and Kanwal (2009),
	<i>Casearia graveolens</i>	Dalz.	Fruit	Nadkarni (1996), Kulkarni <i>et al.</i> , (1990),
	<i>Casearia tomentosa</i>	Roxb.	fruit	Joshi (1986), Nadkarni (1996), Pedro (1990),
	<i>Casearia wynadensis</i>	Bedd.	Leaves	Narayanan <i>et al.</i> , (2011),
	<i>Gynocardia odorata</i>	R.Br.	Pulp of fruit,	Envis (2017), Tag <i>et al.</i> , (2005), Lamba (1970), Pedro (1990),
	<i>Hydnocarpus kurzii</i>	King.	Fruit	Envis (2017), Pedro (1990),
Gesneriaceae	<i>Diymocarpus pedicellata</i>	Roxb.	leaves	Chopra and Chopra (1933),



Gnetaceae	<i>Gnetum contractum</i> Synoname <i>Gnetum scandens</i> (roxb.)	Markgraf.	leaves	Lamba (1970), Pedro (1990),
Guttiferae	<i>Calophyllum inophyllum</i>	Linn.	NR	Colonel <i>et al.</i> , (1955).
Juglandaceae	<i>Engelhardtia colebrookiana</i>	Lindl.	leaves	Bhatt (1991),
	<i>Engelhardtia spicata</i>	Lech.	Tender shoots	Chopra and Chopra (1933),
	<i>Engelhardtia polystochya</i>	Rodik	bark	Pedro (1990), Ambasta (2006).
	<i>Juglans regia</i>	Linn.	Bark, leaves, rind of unripe fruit,	Pradhan and Badola (2008), Nagi and Kanwal (2009),
	<i>Juglan nigra</i>	Linn.	NR	Pedro (1990),
Lamiaceae	<i>Eremostachys superba</i>	Royle.	leaves	Chopra and Chopra (1933),
	<i>Eremostachys vicaryi</i>	Benth.	Seeds, whole plant,	Chopra and Chopra (1933), Lamba (1970), Nadkarni (1996), Pedro (1990),
	<i>Leucas stelligera</i>	Wall.	NR	Kulkarni <i>et al.</i> , (1990),
Lecythidaceae	<i>Barringtonia acutangula</i>	Linn. Gaertn	Seeds, roots, dry root barks, fruit,	LShanna and Labja (1999), Pedro (1990),
	<i>Barringtonia asiatica</i>	Linn.	seeds	Chopra and Chopra (1933),
	<i>Barringtonia macrocarpa</i>	Hassk.	Root bark,	Pedro (1990),
	<i>Barringtonia rocemosa</i>	Roxb.	Seeds, bark, roots,	Chopra and Chopra (1933), Lamba (1970), Ramanayaka and Atapattu (2006),
	<i>Barringtonia speciosa</i>	Forst.	Bark, roots,	Lamba (1970),
	<i>Careya arborea</i>	Roxb.	Root bark, leaves,	Tag <i>et al.</i> , (2005), Heda and Kulkarni (2009), Kumar <i>et al.</i> , (2006),
Leguminoceae	<i>Abraus percatorius</i>	Linn.	seeds	Agarkar (1991),
	<i>Adinobotrys atropurpureus</i>	Dunn.	roots	Vardhana (2006),
	<i>Derris scandens</i>	Roxb.	Roots	Namsa <i>et al.</i> , (2011), Lamba (1970), Nimachow <i>et al.</i> , (2008), Nadkarni (1996), Pedro (1990), Ramanayaka and Atapattu (2006), Rawat (2008),
	<i>Lathyrus sativus</i>	Linn.	NR	Agarkar (1991),
	<i>Milletia piscidia</i>	Wight.	NR	Pedro (1990),
Liliaceae	<i>Gloriosa superba</i>	Linn.	leaf	Chopra and chopra (1933),
	<i>Urginia coromandeliana</i>	Hook	Fruit	Heda and Kulkarni (2009),
Lobeliaceae	<i>Lobelia nicotianaefolia</i>	Heyne.		Agarkar (1991),
Loganiaceae	<i>Strychnos colubrina</i>	Linn.	Roots, seed, wood, stem bark,	Pedro (1990),
	<i>Strychnos nuxvomica</i>	Linn.	Seed, fruit,	Sinha and Munshi (2010), Ashraf <i>et al.</i> , (2010), Pedro (1990),
	<i>Strychnos potatorum</i>	Linn.	NR	Sinha and Munshi (2010),
lythraceae	<i>Ammannia baccifera</i>	Linn..	Whole plant,	Bombay (1953), Agarkar (1991),
Martyniaceae	<i>Martynia annua</i>	Linn.	Leaves	Sinha and Munshi (2010),
Meliaceae	<i>Azadirachta indica</i>	Juss	NR	Malla and Chhetri (2011)
	<i>Trichilia emetica</i> Synm. <i>T. trifoliata</i> (Roxb.)	Vahl.	Bark	Nadkarni (1996),
	<i>Walsuro Trifoliata</i> (Harms.) W. piscidia	Roxb.	Bark, fruit,	Sinha and Munshi (2010), Lamba (1970), Pedro (1990),
Menispermaceae	<i>Anamirta cocculus</i>	Linn.	Seeds, dry berries, fruits,	Drury (1973), Kirtikar and Basu (1991) Agrawal <i>et al.</i> , (1999), Satya and Paridhavi (2012), Lamba (1970), Tag <i>et al.</i> , (2005), Ramanayaka and Atapattu (2006),
	<i>Cocculus pendulus</i>	Diels.	NR	Ambasta (2006),
	<i>Pachygone ovata</i>	Miers.	Dry fruit	Colonel <i>et al.</i> , (1955),
	<i>Tinospora cordifolia</i>	Thunb.	Braches	Pedro (1990),
Mimosaceae	<i>Acacia auriculiformis, acum ex.</i>	Benth	fruit	Mishra <i>et al.</i> , (2014),
	<i>Acacia caesia</i>	Willd.	Root	Kala (2009),
	<i>Acacia concinna</i>	DC.	Pods,	Ambasta (2006),
	<i>Acacia rugata</i> Synm. <i>Acacia sinuata</i>	Lam.	Stem,	Colonel <i>et al.</i> , (1955), Satya and Solanki, (2010),
	<i>Acacia torta</i>	Roxb.	Stem, bark,	Das <i>et al.</i> , (2003), Sonawane <i>et al.</i> , (2012),
	<i>Albizia procera</i>	Benth.	Leaf, stem, bark,	Sinha and Munshi (2010), Rai and Lalramnghinglova (2010), Kumar <i>et al.</i> , (2007), Lamba (1970), Kulkarni <i>et al.</i> , (1990), Joshi (1986), Pedro (1990),
	<i>Albizia chinensis</i>	Osbeck.	NR	Pedro (1990),
	<i>Albizia lebbak</i>	Linn..	Seeds, leaves, bark,	Sinha and Munshi (2010),
	<i>Albizia stipulata</i>	Roxb.	NR	Colonel <i>et al.</i> , (1955),
	<i>Entada phaseoloides</i>	Merrill	Seed bark fruit	Envis (2017),
	<i>Mimosa himalayana</i>	Gamble.	Bark	Pedro (1990),
	<i>Mimosa invisa</i>	Mart.	Stem bark,	Ayyanar <i>et al.</i> , (2010),
	<i>Mimosa lucida</i>	Roxb.	Leaves	Nadkarni (1996),
<i>Mimosa pubica</i>	Linn.	Leaves	Sinha and Munshi (2010),	



	<i>Acacia pennata</i>	Linn.	Fruit, stem, whole plant. Bark,	Petr (1999), Nagi and Kanwal (2009), Tag <i>et al.</i> , (2005), Lamba (1970), Kulkarni <i>et al.</i> , (1990), Joshi (1986),
Molluginaceae	<i>Molluga pentaphylla</i>	Linn.	Whole plant	Sinha and Munshi (2010),
	<i>Mollugo cerviana</i>	Ser.	Whole plant	Sinha and Munshi (2010),
Moraceae	<i>Antiaris toxicaria</i>	Lesch	NR	Agarkar (1991),
	<i>Ficus pumila</i>	Linn.	NR	Petr (1999),
Myricaceae	<i>Myrica esculenta</i> Synm. <i>M.nagi</i> (Thumb.)	Ham.	Bark, stem bark,	Envis (2017), Krishnamoorthy <i>et al.</i> , (1963), Lamba (1970), Pedro (1990), Ramanujam and Ratha (1980),
Myrsinaceae	<i>Aegiceras corniculatum</i>	Linn.	bark	<i>Aegiceras corniculatum</i> (2018),
	<i>Maesa indica</i>	Wall.	Bark, Leaves	Lamba (1970), Kulkarni <i>et al.</i> , (1990), Pedro (1990),
Myrtaceae	<i>Syzygium cuminii</i>	Linn.	Bark,	Nagi and Kanwal (2009), Kulkarni <i>et al.</i> , (1990),
	<i>Eugenia caryophyllus</i>	Linn.	Dry flower buds	Ramanayaka and Atapattu (2006),
Oleaceae	<i>Ola</i> spp. <i>Oleaceae</i> (Korkat)	Linn.	Leaves	Heda and Kulkarni (2009),
Onagraceae	<i>Ludwigia perennis</i>	Linn.	Whole plant	Mishra <i>et al.</i> , (2014),
Papilionaceae	<i>Butea monosperma</i>	Lam.	Whole plant, stem bark,	Patil <i>et al.</i> , (2006), Mishra <i>et al.</i> , (2014), Joshi (1986), Katewa <i>et al.</i> , (2008),
	<i>Pongamia pinnata</i>	Pierre	Root, leaves	Ambasta (2006), Kulkarni <i>et al.</i> , (1990),
	<i>Tephrosia purpurea</i>	Pers.	Beans, roots, seeds,	Bhagya and Sridhar (2009), Lamba (1970),
Papveraceae	<i>Argemone mexicana</i>	Linn.	Bark, leaf, fruit, areal parts,	Sinha and Munshi (2010),
Phyllanthaceae	<i>Flueggea virosa</i>	Baill.	NR	Nadkarni (1996), Pedro (1990),
	<i>Flueggea leucopyrus</i>	Wight	NR	Nadkarni (1996), Pedro (1990),
	<i>Flueggea microcarpa</i>	Willd.	NR	Nadkarni (1996), Pedro (1990),
Pittosporaceae	<i>Pittosporum ferrugineum</i>	Aiton.	Leaves, fruit,	Ambasta (2006),
Plumbaginaceae	<i>Plumbago indica</i> Synm. <i>P. rosea</i> (Linn.)	Linn.	NR	Agarkar (1991),
	<i>Plumbago zeylanica</i>	Linn.	shoot	Sinha and Munshi (2010),
Plantaginaceae	<i>Veronica anagallis</i>	Linn.	NR	Satya and Solanki, (2010)
Polygonaceae	<i>Polygonum hydropiper</i> Synm. <i>P. flacidum</i>	Linn.	Whole plant	Petr (1999), Tag <i>et al.</i> , (2005), Envis (2017), Kalita <i>et al.</i> , (2010), Ramanujam and Ratha (1980), Rawat (2008),
	<i>Polygonum minus</i>	Huds.	Seeds	Envis (2017),
	<i>Polygonum orientale</i>	Linn.	Whole plant	Choudhary <i>et al.</i> , (2011),
	<i>Polygonum pubescens</i>	Linn.	Whole plant,	Petr (1999), Choudhary <i>et al.</i> , (2011),
	<i>Polygonum serrulatum</i>	Lagase	Whole plant	Mishra <i>et al.</i> , (2014),
	<i>Polygonum strigosum</i>	R.Br.	NR	Ambasta (2006),
Primulaceae	<i>Polygonum viscosum</i>	Ham.	Whole plant	Shreshtha (1985),
	<i>Anagallis arvensis</i>	Linn..	NR	Lamba (1970), Nadkarni (1996),
	<i>Cyclamen latifolium</i>	Sibth	root	Pedro (1990),
	<i>Cyclamen persicum</i>	Mill.	Fruit, roots	Lamba (1970), Nadkarni (1996), Pedro (1990), Ambasta (2006),
Rhamnaceae	<i>Colubrina asiatica</i>	Brongn.	fruit	Ambasta (2006),
Rosaceae	<i>Potentilla fulgens</i>	Linn.	Root	Ramanujam And Ratha (1980),
	<i>Prunus ceylanica</i> Synm <i>Pygeum gardneri</i> (Hook)	Wight,	Kernel	Envis (2017),
	<i>Pygeum gardnerii</i>	Hook.	Kernel of fruit, seeds,	Chopra and Chopra (1933), Pedro (1990),
Rubiaceae	<i>Pyrus malus</i>	Willd.	NR	Nadkarni (1996),
	<i>Adina cordifolia</i>	Benth & Hook.	Leaf, stem, bark, wood.	Sinha and Munshi (2010), Pedro (1990), Chopra and Chopra (1933),
	<i>Canthium dicocum</i>	Merrill Gaerth.	Bark, leaves	Tag <i>et al.</i> , (2005),
	<i>Catunaregum spinosa</i> Synm. <i>Gardenia spinosa</i> , <i>Randia spinosa</i> , <i>Xeromphis spinosa</i>	thumb	Fruit, unripped fruit,	Nagi and Kanwal (2009), Ignacimuthu <i>et al.</i> , (2006), Singh (1988), Kulkarni <i>et al.</i> , (1990), Joshi (1986),
	<i>Cinchona calisaya</i>	Wedd.	NR	Colonel <i>et al.</i> , (1955),
	<i>Hedyotis scandens</i>	Roxb.	NR	Envis (2017),
	<i>Gardenia lucida</i> synonym of <i>Gardenia resinifera</i> Roth	Roxb.	Gum	Seshadri & Viswanadham (1947), Singh (1988),
	<i>Nauclea orientalis</i>	Linn.	bark	Ambasta (2006),
	<i>Randia spinosa</i> Synm. <i>R. dumetorum</i> (Lamk)	Poir.	Root, unripe fruit, Fruit, leaves,	Envis (2017), Sinha and Munshi (2010), Petr (1999), Kala (2009), Lamba (1970),
	<i>Randia uliginosa</i>	D.C.	Fruit,	Pedro (1990),
Rutaceae	<i>Acronychia pedunculata</i>	Miq.	Roots	Envis (2017), Pedro (1990),
	<i>Aegle marmelos</i>	Linn. Correa.	Root bark	Envis (2017), Narasimhan <i>et al.</i> , (1991), Joshi (1986),
	<i>Chloroxylon swietenia</i>	Dc.	leaves	Heda and Kulkarni (2009), Kala (2009),
	<i>Zanthoxylum acanthopodium</i>	Dc.	Seed, fruit.	Seshadri and Viswanadham (1947), Gairola and Biswas (2008),
	<i>Zanthoxylum armatum</i> (D.C.) Synm. <i>Z. alatum</i>	Roxb.	Bark, seed, fruit,	Chopra and Chopra (1933), Nagi and Kanwal (2009), Lamba (1970), Ramanujan (1981), Ramanujam and Ratha (1980),
	<i>Zanthoxylum nitidum</i>	Roxb. Dc. Wall.	Bark, fruit,	Tag <i>et al.</i> , (2005), Envis (2017),



	<i>Xeromphis longifolia</i>	Wild.	NR	Kulkarni <i>et al.</i> , (1990),
	<i>Atalantia wightii</i>	Tanaka. Correa.	Whole plant	Hosagoudar & Henry (1996),
	<i>Zanthoxylum limonelia</i> (Dennst.) Z. rhetsa	Roxb.	NR	Choudhary <i>et al.</i> , (2011), Nimachow <i>et al.</i> , (2008),
Sapindaceae	<i>Aesculus assamica</i>	Griff.	Stem, bark	Namsa <i>et al.</i> , (2011), Nimachow <i>et al.</i> , (2008), Rawat (2008),
	<i>Aesculus indica</i>	Colebr.	fruit	Bhatt (1992), Nagi and Kanwal (2009),
	<i>Aesculus pavia</i>	Linn., Wall.	Bark, leaves	Tag <i>et al.</i> , (2005),
	<i>Dodonaea viscosa</i>	Linn.	NR	Chopra and Chopra (1933),
	<i>Harpullia arborea</i>	Blanco.	bark	Ambasta (2006),
	<i>Harpullia cupanioides</i>	Hiern.	Leaves, stem,	Sinha and Munshi (2010),
	<i>Sapindus laurifolius</i>	Vahl.	Stem bark,	Mishra <i>et al.</i> , (2014),
	<i>Sapindus mukorossi</i>	Gaertn.	Fruit, leaves,	Lamba (1970), Pedro (1990),
	<i>sapindus rarak</i>	DC.	Fruit,	Ambasta (2006),
	<i>Sapindus trifoliatus</i> Synm. <i>S. emarginatus</i> . (Vahl.)	Linn.	Unripe fruit	Ignacimuthu <i>et al.</i> , (2006), Lamba (1970), Pedro (1990), Envis (2017),
	<i>Schleichera oleosa</i>	(Lour.) Oken	Fruit	Joshi (1986),
Sapotaceae	<i>Aisandra butyracea</i>	Roxb.	bark	Ambasta (2006),
	<i>Bassia latifolia</i> synonyme of <i>Madhuca indica</i> .	Roxb.	Seeds,	Lamba (1970), Pedro (1990),
	<i>Madhuca butyracea</i> synonym of <i>Diploknema butyracea</i>	Roxb.	Seeds, Bark,	Gairola & Biswas (2008), Pedro (1990),
	<i>Madhuca longifolia</i>	Koenig.	Seeds, Oil cake, stem,	Nagi and Kanwal (2009), Kulkarni <i>et al.</i> , (1990), Mishra <i>et al.</i> , (2014),
	<i>Madhuca indica</i> Synm. <i>M. longifolia</i> (Koenig), <i>M. latifolia</i> (Mart.)	Gmel	Bark, leaves, flowers, oil cake,	Mahajan <i>et al.</i> , (1989), Sinha and Munshi (2010), Heda and Kulkarni (2009),
Saururaceae	<i>Houttuynia cordata</i>	Thunb.	Whole plant,	Gairola & Biswas (2008),
Scrophulariaceae	<i>Verbascum thapsus</i>	Linn.	Seed, whole plant,	Nadkarni (1996), Pedro (1990),
	<i>verbascum chinense</i>	Linn.	leaves	Mishra <i>et al.</i> , (2014), Joshi (1986),
Solanaceae	<i>Brunfelsia calycina</i>	Benth.	root	Ambasta (2006),
	<i>Cestrum diurnum</i>	Linn.	Leaves,	Jawale and Dama (2012),
	<i>Cestrum nocturnum</i>	Linn.	Leaves,	Jawale <i>et al.</i> , (2012), Jawale & Dama (2010), Jawale (2016 A),
	<i>Datura alba</i>	Linn.	leaves	Ashraf <i>et al.</i> , (2010),
	<i>Datura fastuosa</i>	Linn.	NR	Agarkar (1991),
	<i>Nicotiana rustica</i>	Linn.	NR	Colonel <i>et al.</i> , (1955),
	<i>Nicotiana tobacum</i>	Linn.	Leaf, whole plant,	Sinha and Munshi (2010), Ashraf <i>et al.</i> , (2010), Pedro (1990), Envis (2017),
	<i>Solanum nigrum</i>	Linn.	berries	Mahajan <i>et al.</i> , (1989),
	<i>Datura innoxia</i> synonyme <i>D.alba</i> (Linn.), <i>D. fastuosa</i> (Linn.)	Linn.	NR	Sinha and Munshi (2010), Ayuba <i>et al.</i> , (2012),
	<i>Datura metel</i>	Linn.	leaves	Mahajan <i>et al.</i> , (1989), Sinha and Munshi (2010),
Sterculiaceae	<i>Pterospermum diversifolium</i>	Blume.	Root bark,	Ambasta (2006),
Taxaceae	<i>Taxus baccata</i>	Linn.	Leaves, shoot, seed.	Ramanujam and Ratha (1980),
Theaceae	<i>Camellia kissi</i>	Wall.	Oil cake	Ambasta (2006),
	<i>Schima wallichii</i>	Korth. Dc.	Bark	Shreshtha (1985), Pedro (1990),
Thelypteridaceae	<i>Amphineuron opulentum</i>	Kauf.	bark	Nimachow <i>et al.</i> , (2008),
	<i>Cyclosorus extensus</i>	Blume. Holtt.	Whole plant,	Tag <i>et al.</i> , (2005), Namsa <i>et al.</i> , (2011),
Themelaeaceae	<i>Gnidia glauca</i>	Fresen	bark	Kulkarni <i>et al.</i> , (1990),
	<i>Wikstroemia indica</i> (Linn) Synm. <i>W. viridiflora</i>	Wall.	Bark, root,	Chopra and Chopra (1933), Lamba (1970), Pedro (1990),
Thymelaeaceae	<i>Edgeworthia gardneri</i> synonyme <i>E. tomentosa</i>	Wall. Meisan	NR	Petr (1999),
	<i>Lasiosiphon eriocephalus</i>	Decne	Bark, leaves,	Bombay (1953), Agarkar (1991), Pedro (1990),
	<i>Lasiosiphon hoepfnerianus</i>	Vatke	NR	Pedro (1990),
	<i>Linostoma decandrum</i> (Roxb.)	(Roxb.)	Bark	Lamba (1970),
Tiliaceae	<i>Grewia asiatica</i>	Linn	NR	Pedro (1990),
Ulmaceae	<i>Holoptelea integrifolia</i>	Planch.	Leaves, stem bark,	Kulkarni <i>et al.</i> , (1990), Mishra <i>et al.</i> , (2014), Katewa <i>et al.</i> , (2008), Joshi (1986), Heda and Kulkarni (2009),
Verbenaceae	<i>Callicarpa candicans</i>	Hochr.	leaves	Ambasta (2006),
	<i>Callicarpa longifolia</i>	Lam.	NR	Colonel <i>et al.</i> , (1955),
	<i>Clerodendron infortunatum</i>	Linn.	NR	Colonel <i>et al.</i> , (1955),
	<i>Faradaya splendida</i>	F.Muell.	bark	Ambasta (2006),
	<i>Lantana camara</i>	Linn. Var.	NR	Khare (2007)
Zingiberaceae, costaceae	<i>Costus speciosus</i>	Koenig Sm.	Tuberous root stock,	Heda and Kulkarni (2009), Kala (2009), Kulkarni <i>et al.</i> , (1990), Mishra <i>et al.</i> , (2014),



NR= Not reported.

## DISCUSSION

It has been estimated that only 20-30% of the world's flora of approximately 250,000-500,000 species has been subjected to phytochemical investigations (Principle, 1990; Simmonds and Grayer, 1999; Cordell, 2000; Plotkin, 2001). Out of 300 wild plant species used as pesticides and piscicides, about 175 have potential for the development of bio-pesticides (Pushpangadan, 1984; Mishra, 1985; Saklani and Jain, 1996; Saini, 1996; Prakash and Singh, 2000; Nautiyal *et al.*, 2000-2001; Satyavati, 2001; Sarin, 2003).

The active phytochemicals responsible for poisoning fish are rotenone occurs almost in the genera of Tephrosia, Derris, and Mundulea, saponins occurs in sapindaceae and solanaceae families, cardiac glycosides are common in apocynaceae and asclepiadaceae and moraceae, alkaloids are common in Solanaceae, loganiaceae and menispermaceae, tannins are found widely distributed among plant kingdom, cyanogenic compounds are usually found in the Rosaceae, flacourtiaceae and euphorbiaceae. Ichthyothereol are present in several genera of asteraceae. Plants containing rotenones are the second most utilized as a fish poison. Rotenone is an alkaloid toxin, in a group called flavonoids and stuns fish by impairing their oxygen consumption. The active substance extracted hitherto from roots of Derris elliptica or Lonchocarpus nicou (Papilionaceae), is synthesized today and used in experimental fishing or in the elimination of undesirable species in fishing-ponds (Morrison, 1988). These plants are toxic only to cold-blooded creatures and is found almost exclusively among the family comprised of legumes (Papilionaceae, Mimosaceae, Cesalpiniaceae). Rotenone is also used today as an insecticide. Saponins is heterosides of alcohol very commonly found secondary plant metabolites in plants. They form foamy products that can be used as soap. This group of glucosides when mixed with water lower the surface tension of water allowing the formation of small stable bubbles. "Soapnut" is good example (Sapindus mukorossi, Sapindaceae) whose fruit contain a saponin extremely toxic for fish, hence its use for fishing by many Indians tribes. Saponins normally are converted in the digestive system then enter the bloodstream to show its toxicity, but fish take in saponins directly into their bloodstream through their gills. The phytochemical acts on the gill surface of the fish without affecting their edibility. Saponins also cause the haemolysis of red blood cells that help the toxin to spread quickly. Even though the effects of the poison are powerful, they are not usually fatal and irreversible. Fish that are washed away and immediately kept into uncontaminated water revive, and can return to their pre-toxic condition. Because of this, the fishermen would prefer to gather the stunned fish using these kind of piscicidal plants. Plant Families that contain significant saponins are Amaryllidaceae, Convolvulaceae, Dioscoreaceae, Lamiaceae, Lecythidaceae, Liliaceae, Loganiaceae, Meliaceae, Menispermaceae, Papilionaceae, Solanaceae, Sapindaceae, Sapotaceae, Scrophulariaceae, Solanaceae, Verbenaceae. (Acevedo-Rodríguez, 1990). These two plant families of chemical substances are toxic for fish, but not for human who consume them, at least in small doses, which accept their use in fishing. Their absorption by fish cause suffocation, by an inhibiting action at the mitochondrial level, either as in the case of rotenones, or by attack on the respiratory surface and blood cells, in the case of saponins. This type of fishing is suitable when the volume of water is small and restricted or stagnant so that the poison reaches a sufficient level of concentration to be effective. It is generally practiced in fresh water ponds and streams. (Kumar *et al.*, 2007; Malla and Chhetri, 2011; Mishra *et al.*, 2014; Negi and Kanwal, 2009; Ramanayaka and Atapattu, 2006).

In Indian medicinal and poisonous plant record, majority literature was found based on ethno-botanical references. Very few attempts are made by researchers to reinvestigate such ethno-botanical plants in laboratory. Hence, here an attempt is made to collect the extensive list of ethno-botanical reported and piscicidal plants from the Indian continent. Also literature survey was made to view the insight of laboratory evaluated piscicidal plants and the fish species used for the bioassay.

A list of 307 Piscicidal plants is presented in a Table -1. These piscicidal plants are distributed in 208 genera and 84 families. Largest piscicidal plants belong to Fabaceae with 31 plants species in it. Followed by Euphorbiaceae with 24 plants and Apocynaceae with 17 plant species. Various parts of plant like roots, tuber roots, rhizomes, stem, wood, arial parts, whole plant, young tender shoots and twigs, stem and root bark, unripe fruits, fruit pulp, capsules, beans, kernels, dry fruits, berries, bulbs, corn, pericarp, flowers, inflorescences, seeds, oil, oil cake, gum, latex, and leaves are used for application of these piscicidal plants in stagnant or flowing freshwater bodies to kill or stupefying fishes. Among all these different parts, leaves, seeds, and bark is used majorly. While searching in the literature it is observed





that among all 307 plant species only 30 were systematically reinvestigated in the laboratory for their piscicidal property. Various fish species have been used for such bioassay. Around 25 different fish species have been used for evaluation of lethal and sublethal doses of different plant extract, viz. *Barilius bendelisis*, *Catla catla*, *Channa striatus*, *Cirrhina mrigala*, *Clarias batrachus*, *Clarias lazera*, *Ctenopharyngodon idella*, *Cyprinus carpio*, *Danio dangila*, *Gambusia affinis*, *Heteropneustes fossilis*, *Hill stream loach*, *Labeo rohita*, *Lebistes reticulatus*, *Poecilia reticulata*, *Nemacheilus sinuatus*, *Ophiocephalus punctatus*, *Oreochromis mossambicus*, *Oryzias latipes*, *Punitius chilinoides*, *Punitus scheynius*, *puntius sarana*, *Tilapia nilotica*, *Trichopodus trichopterus*. These plant extracts are used in the form of Aqueous, alcoholic, and in organic solvents. Present review of Indian piscicidal plant present scenario of research status of Indian piscicidal plants. It will help scientist to pursue further systematic reinvestigation on many ethno-botanically observed piscicidal plants and their properties. This will also help to develop correlation among the other biocidal activity of these plants. This review will certainly enriches the prospective in piscicidal plants phytochemical research.

## CONCLUSION

From present literature review it is observed that 307 plants are till date reported as Indian piscicidal plants, from 84 families, yet they need to be explained in detail taxonomically. Many plants are found synonyms of other with conflict in their families and genus. Only 30 plant species have been reinvestigated for their piscicidal activity in laboratory. Many more ethno-botanical piscicidal plants are yet to be reinvestigated with proper fish species and bioassay method in laboratory to verify their biocidal potential and poisonous phytochemicals. There is a huge scope for the researcher to reveal the mystery of these Indian piscicidal plants.

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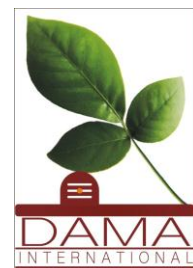
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