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Phytoetymology and ethnobotany of indigenous or introduced gymnosperms in India

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Abstract
The paper deals with the etymology of 46 genera belonging to 12 families reported from India with their primary citation and ethno botany. The term Phyto etymology is used for the first time here for the study of Plant etymology. Phyto etymologies are on the basis of morphological characters, in the honour of a person, special features, place of discovery, and combination of Greek and Latin words, with a genus similarity or based on vernacular names. Ethnobotany of given genera reveals that 26 out of 46 Genera have medicinal properties, 12 have timber value and 18 show other useful properties.

Keywords: Phyto etymology, ethnobotany, gymnosperms, India

Introduction
Gymnosperms are currently placed in five distinct and widely divergent orders namely Cycadales, Ginkgoales, Taxales, Coniferales and Gnetales [15]. Hooker (1888) reported 40 species and 2 varieties belonging to 16 genera under three orders namely Gnetaceae, Coniferae and Cycadaceae from British India [24]. According to Christenhusz *et al.* (2011) there are 1026 species all around the world in almost all continents, except Antarctica [7]. Etymology word derives from the Greek word *etumos*, meaning ' true, real, actual' which is cognate with Sanskrit '*satyah* (truth)' and the suffix -*logia*, denoting 'the study of'. It is the study of the class in words and the way in which their meanings have changed throughout time [22].
Etymology not only enhances our understanding of any native language, but also gives us insights into its shared roots with other languages. Greek world *phyton*, means “plant” and latin word *phyto* means "Pertaining to or derived from plants" [65]. *Phytoetymology* is the study of plant etymology with true meaning and origin of the word.
The name gymnosperm derived from the Greek word *gymnos* means 'naked' and *sperma* means 'seed' refers to naked seeds coined by Theophrastus in 300 B.C. Most of the Gymnosperms are woody; some are shrubs, trees and rarely vines. It differ from flowering plants in that, the seeds are not enclosed and the most familiar being cones.

Phytoetymology of family and genus name with ethnobotany
The Phytoetymology of 46 genera belonging to 12 families of Gymnosperms (Indigenous or introduced) reported from India [49].

Family: 1. Araucariaceae Henkel & W. Hochst.
Family name originated from genus *'Araucaria Juss*.' and Latin suffix *aceae* means 'a family' or 'a group' (Araucariaceae Henkel & W. Hochst. *Synopsis der Nädelholzer 17: 1. 1865*) [59].

Genus: 1.1 *Araucaria* Juss.
Named after Arauco Province in Central Chile and from the Chilean name, *araucaros* or *araucana*. *Araucaros* means 'the tree' and *araucana* means the Araucani Indians of Central Chile, Indian people of south central Chile and adjacent regions of Argentina and *aria* derived from Latin word *arius*, a suffix meaning 'related to belonging to' (*Araucaria angustifolia* (Bertol.) *Kuntze. Revis. Gen. Pl. 3(2): 375 1898.*) [11, 20, 42, 68].
Araucaria angustifolia (Bertol.) Kuntze leaves are emollient and antiseptic, used for respiratory infections and rheumatism [2]. *Araucaria araucana* (Molina) K.Koch resin was used to treat contusions, ulcers, to help cicatrization and was also applied to wounds [28, 43].

Genus: 1.2 *Agathis* Salisb.
Derived from Greek word *agathis* means 'a ball of thread'; referring to the catkin on the female trees (*Agathis alba* (Lam.) Foxw. *Philipp. J. Sci. 1910: 173 1910*) [42].
Agathis dammara (Lamb.) Rich. & A.Rich. a famous dammar resin, which is widely used in industry and medicine, softwood used for construction, boat masts, joinery, household utensils, matches, veneer, packaging, moulding, plywood and pulpwood [19].

Family: 2. Cupressaceae Gray.
Name given to the family on the basis of genus '*Cupressus* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Cupressaceae Gray. *A Natural Arrangement of British Plants 2: 222, 225. 1822*) [59].

Genus: 2.1 *Callitris* Vent.
Derived from the Greek words *kalli* means 'beautiful' and *treis, tria* means 'three'; referring to the arrangements of the parts of the plants, the leaves are in whorls of three (*Callitris endlicheri* (Parl.) F.M.Bailey. *Syn. Queensl. Fl. 497 1883*) [10, 42].
Callitris columellaris F. Muell. essential oil called "Australian blue cypress" used in perfumery, cosmetics and aromatherapy. *Callitris columellaris* F. Muell. used in abdominal cramps, insect repellent and as analgesic [14].

Genus: 2.2 *Calocedrus* Kurz
Derived from the Greek words *kallos* means 'beauty', *kalos, kalli* means 'beautiful' and *kedros* means 'cedar' (*Calocedrus macrolepis* Kurz. *J. Bot. 11: 196 1878*) [20, 42].
The dense leaflets have been used as a flavouring, stomach troubles and colds [32, 39].

Genus: 2.3 *Chamaecyparis* Spach
Derived from Greek word *chamaikyparissos* and Latin word *chamaecyparissos* used for the ground-cypress (Plinius), Greek words *chamai* means 'on the ground' and *kyparissos* means 'cypress' (*Chamaecyparis formosensis* Matsum. *Bot. Mag. (Tokyo) 15: 137 1901*) [42].
Chamaecyparis lawsoniana (A.Murray bis) Parl. resin is a powerful diuretic, other uses as arrow shafts, storage battery separators, sashes, doors, mothproof linings for boxes and closets, boats, matches, water tanks, bridges, railroad ties and mine timbers [3, 39].

Genus: 2.4. *Cupressus* L.
Cupressus derived from Greek word *kuparissos, kyparissos* or Akkadian *kupuru, kupru* means 'bitumen' and *kuppuru* means 'purify, to clean' (*Cupressus arizonica* Greene. *Bull. Torrey Bot. Club 9: 64 1882*) [42].
Cupressus cashmeriana Royle ex Carrière trees are ornamental and religious. It is planted in Buddhist monasteries and temple grounds [70].

Genus: 2.5 *Fitzyroya* Lindl.
The genus was named in honour of Robert Fitz Roy (1805-1865), who achieved lasting fame as the captain of HMS Beagle during Charles Darwin's famous voyage (*Fitzroya cupressoides* (Molina) I.M. Johnst. *Contr. Gray Herb. 70: 91 1924*) [16].
Fitzroya cupressoides (Molina) I.M. Johnst, fibre obtained from the inner bark is used for caulking boats. Wood is used for construction, carpentry and musical instruments [40].

Genus: 2.6 *Juniperus* L.
Derived from the classical Latin name *juniperus* means 'the juniper tree' (Plinius) (*Juniperus arizonica* (R.P.Adams) R.P.Adams. *Phytologia 88: 306 2006*) [42].
Juniperus communis L. acts as stomachic, emollient and useful in spleenic disorders, *Pitta* associated abdominal disorders, hemorrhoids, analgesia, worm infestation, constipation, cough, inflammation, dyspepsia, chronic rhinitis, leucorrhea and dysuria [8, 47].

Genus: 2.7 *Taiwania* Hayata
Name given on the basis of Taiwan, Republic of China (*Taiwania cryptomerioides* Hayata *J. Linn. Soc., Bot. 37: 330 1906*) [42].
Taiwania cryptomerioides Hayata wood is very durable and valued for timber and as an ornamental tree [54].

Genus: 2.8 *Tetraclinis* Mast.
Derived from the Greek words *tetra* means 'four' and *kline* means 'a bed, couch'; refers to the scale leaves arranged in whorls of four (*Tetraclinis articulata* (Vahl) Mast. *J. Roy. Hort. Soc. 14: 250 1892*) [10, 20, 42].
Tetraclinis articulata (Vahl) Mast. Wood used for kitchen utensils and household ornaments. Resin from the wood, known as sandarac gum, is used to make liquor and in Morocco it is used as a remedy for difficult childbirth, other uses including the treatment of cramps, roundworm, tapeworm and insomnia [55].

Genus: 2.9 *Thuja* L.
Derived from Greek word *thyia*, for a kind of resinous tree (Theophrastus) or a juniper, *thyo*, *thyein* means 'to sacrifice, to burn a victim', Latin word *thya* or *thyia* is the Greek name for the citrus-tree (Plinius), *thyinus*, made of the 'citrus-tree' (*Thuja occidentalis* L. *Sp. Pl. 1002 1753*.) [10, 20, 42].
Thuja occidentalis L. used to treat fever, cough, headache, swollen hands and rheumatic problems; dried leafy young twigs are anthelmintic, anti-inflammatory, antiseptic, aromatic, astringent, diaphoretic and diuretic [19, 63].

Genus: 2.10 *Thujopsis* Siebold & Zucc. ex Lindl.
Resembling the genus *Thuja* [Greek word *thyia*, for a kind of resinous tree (Theophrastus) or a juniper, *thyo*, *thyein* means 'to sacrifice, to burn a victim', Latin word *thya* or *thyia* is the Greek name for the citrus-tree (Plinius), *thyinus*, made of the 'citrus-tree'] (*Thujopsis dolabrata* (L.f.) Siebold & Zucc. *Fl. Jap. 2: 34 1844*.) [10, 20, 42].
Thujopsis dolabrata var. hondae Makino bark is used for match cord, for filling (caulking) between boards on boats etc. Wood is soft, durable, elastic and used for construction, cabinet work, water pipes, ship building etc [60].

Genus: 2.11 *Platycladus* Spach
Derived from the Greek words *platys* means 'broad, flat' and *klados* means 'branch'; refers to the flattened branches or stems (*Platycladus orientalis* (L.) Franco). *Portugaliae Act. Biol., Sér. B, Sist. Julio Henriques: 33 1949)* [10, 20, 42, 67].
Platycladus orientalis (L.) France used as an ornamental plant [61].

Genus: 2.12 *Widdringtonia* Endl.
Name given in the honour of the traveler in Spain, Commander (of the Royal Navy) Samuel Edward Widdrington (1787-1856) (*Widdringtonia nodiflora* (L.) E. Powrie. *J. S. African Bot. 38: 303 1972*) [20, 42].
Widdringtonia nodiflora (L.) E. Powrie. wood is ideal for furniture, roofing shingles and paneling [19, 36].

Family: 3. Cycadaceae Pers.
Name given to the family on the basis of genus '*Cycas* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Cycadaceae Pers. *Synopsis Plantarum 2: 630. 1807*) [59].

Genus: 3.1 *Cycas* L.
The Greek name for a kind of palm, *kykas*, *koikas*, *koix*. Theophrastus named it for an unknown palm (sago palm) (*Cycas circinalis* L. *Sp. Pl. 1188 1753*) [10, 20, 42].
Cycas circinalis L. contain alkaloids of carcinogens and an amino acid that causes chronic nervous disorders. The pollen is narcotic. The bark and the seeds are grounded to a paste with oil and used as a poultice on sores, cuts, wounds, ulcers and swellings. The juice of tender leaves is useful in the treatment of flatulence and vomiting [19].

Family: 4. Ephedraceae Dumort.
Name given to the family on the basis of genus '*Ephedra* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Ephedraceae Dumort. *Analyse des Familles des Plantes 11, 12. 1829*) [59].

Genus: 4.1 *Ephedra* L.
Derived from Greek word *ephedra* (*epi* means 'upon' and *hedra* means 'seat') for the common mare's tail (Hippuris), Latin word *ephedra* or *ephedros* for the plant horse-tail (*Ephedra alata* Decne. *Ann. Sci. Nat. (Paris) 2: 239 1824*) [42].
Ephedra gerardiana Wall. ex Stapf used for wound healing also useful in *Pitta* associated sinus and tumor [45].

Family: 5. Ginkgoaceae Engl.
Name given to the family on the basis of genus '*Ginkgo* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Ginkgoaceae Engl. *Die Natürlichen Pflanzenfamilien 1: 19. 1897*) [59].

Genus: 5.1 *Ginkgo* L.
In ancient Japanese *ginkyo* (*gin* means 'silver' and *kyo* means 'apricot') and in Chinese *yinhing* (*yin* means 'silver' and *hing* means 'apricot'); referring to its white fruits (*Ginkgo biloba* L. *Mant. Pl. 2: 313 1771*) [20, 42].
Ginkgo biloba L. leaf extract is often taken for memory disorders including Alzheimer's disease. Some people use it for leg cramps caused by poor blood supply (claudication) [63].

Family: 6. Gnetaceae Blume.
Name given to the family on the basis of genus '*Gnetum* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Gnetaceae Blume. *De Novis Quisbusdam Plantarum Familiis Expositio 23. 1833*) [59].

Genus: 6.1 *Gnetum* L.
Derived from the Malayan vernacular name *ganemo*, *gnemon*, for *Gnetum gnemon* L. (*Mant. Pl. 1: 125 1767*) [20, 42].
Gnetum gnemon L. young leaves, inflorescences and tender tips are edible and used as a vegetable. The bark fibers are processed into rope making, fishing net and high grade paper products. The inner bark is used for the famous Sumba bow string [4]. *Gnetum montanum* Markgr. Root is used as a general antidote to poisons and also used as a remedy for malaria [48].

Family: 7. Pinaceae Spreng. ex Rudolphi
Name given to the family on the basis of genus '*Pinus* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Pinaceae Spreng. ex Rudolphi. *Systema orbis vegetabilium 35. 1830*) [59].

Genus: 7.1 *Abies* Mill.
Derived from Latin word *abies*, a name used for 'silver fir' (*Abies alba* Mill. *Gard. Dict. ed. 7 110, 2 1759*) [10, 42].
Abies spectabilis (D.Don) Mirb. used in cough, dyspnoea, anorexia, cardiac disorders, anaemia, etc. It also acts as a carminative and gives relief in emesis and diarrhea [37, 56, 57, 58].

Genus: 7.2 *Cedrus* Trew
Derived from the Latin word *cedrus* means 'the cedar (*Juniperus oxycedrus* L.) (Plinius)' and Greek word *kedros* means 'cedar, cedar-tree, prickly cedar, Syrian cedar, Phoenician cedar, Himalayan cedar, juniper', Arabic word *Kedri* used for cedru. (*Cedrus deodara* (Roxb. ex D.Don) G.Don. *Hort. Brit. 1: 388 1830*) [20, 42].
Cedrus deodara (Roxb. ex D.Don) G.Don. Fruit is useful in throat, cephalic and nasal disorders [37, 45, 46, 56, 57].

Genus: 7.3 *Larix* Mill.
Derived from Latin classical name *larix* means 'a larch, larch tree'; used by Plinius and Vitruvius (*Larix czekanowskii* Szafer. *Kosmos (Lvov) 38: 1281 1913*.) [42].
Larchwood (Larix) possesses astringent and diuretic. Its antiseptic and useful in treating cystitis, respiratory problems and wounds [12]. A sweet-tasting manna is obtained from the trunk; it can be eaten raw but is mainly used medicinally [39].

Genus: 7.4 *Picea* A. Diet.
Derived from Latin word *picea*, means 'the pitch-pine', *pix*, *picis* means 'pitch' a resinous product, Greek word *pissa*, *pitta* and *peuke* means 'the pith-pine, tar' (*Picea abies* (L.) H.Karst. *Deut. Fl. 325 1881*) [20, 42].
Picea abies (L.) H.Karst. used as a flavouring agents. A refreshing tea, rich in vitamin C, can be made from the young shoot tips. The buds, leaves and resin are antibiotic, antiseptic, balsamic, expectorant and sedative. A poultice of the sap or gum is used in the treatment of boil and abscess pain [39].

Genus: 7.5 *Pinus* L.
Derived from ancient Latin name *pinus* probably from *pix*, *picis* means 'pitch' (Akkadian *pehum* means 'to caulk', *pihu*, *pehum* means 'caulker'); Anglo-Saxon *pin*, *pinhnutu*, Sanskrit *pitu-daruh* means 'a kind of pine' (*Pinus roxburghii* Sarg. *Silva N. Amer. 11: 9 1897*) [10, 20, 42, 67].
Pinus longifolia Salisb is aphrodisiac, constipating, complexion enhancer and stomachic used in ear disorders, throat disorders, ophthalmic disorders, excessive sweating,

burning sensation, cough, worm infestation, skin disorders and obesity. It is also used to treat inflammation, pruritus, leprosy, poison, hair mites, wound, fever, foul smell and haemorrhoids [8, 47].

Genus: 7.6 *Pseudotsuga* Carriere

Derived from the Greek word *pseudes* means 'false' and the genus *Tsuga* (Based on the Japanese vernacular name for the hemlock cedar, hemlock fir, Hemlock spruce) (*Pseudotsuga sinensis* Dode. *Bull. Soc. Dendrol. France 23-24: 58 1912*.) [10, 20, 42].

Pseudotsuga sinensis Dode is a timber tree used for construction, bridge building and furniture [69].

Genus: 7.7 *Tsuga* Corr.

Based on the Japanese vernacular name for the hemlock cedar, hemlock fir, Hemlock spruce (*Tsuga chinensis* (Franch.) Pritz. *Bot. Jahrb. Syst. 29: 217 1900*) [10, 20, 42].

Tsuga canadensis (L.) Carrière wood is used extensively as construction lumber and tannins produced by the bark used for tanning leather [53]. A decoction is used in the treatment of diarrhoea, colitis, diverticulitis and cystitis. Externally, it is used as a poultice to cleanse and tighten bleeding wounds, as a douche to treat excessive vaginal discharge, thrush and a prolapsed uterus, and as a mouthwash and gargle for gingivitis and sore throat. The inner bark is diaphoretic and styptic. An infusion is used in the treatment of cold and abdominal pain also in the treatment of eczema and other skin conditions [39].

Family: 8. Podocarpaceae Endl.

Name given to the family on the basis of genus '*Podocarpus* L'Hér. ex Pers. and Latin suffix *aceae* means 'a family' or 'a group' (Podocarpaceae Endl. *Synopsis Coniferarum 203. 1847*) [59].

Genus: 8.1 *Afrocarpus* (Buchholz & N.E. Gray)

Derived from *Africa* and the genus *Podocarpus* (Greek words *pous*, *podos* means 'a foot' and *karpos* means 'fruit'; refers to the length of the fleshy stalk) (*Afrocarpus dawei* (Stapf) C.N.Page. *Notes Roy. Bot. Gard. Edinburgh 45: 384 1988 publ. 1989*) [42].

Afrocarpus gracilior (Pilg.) C.N. Page is an important timber tree; the sawn timber is used in construction and particularly indoor work such as floors, doors and wall paneling [18].

Genus: 8.2 *Nageia* Gaertn.

Based on the *Nagi*-the Japanese name of the plant (*Nageia fleuryi* (Hickel) de Laub. *Blumea 32: 210 1987*) [10, 38, 42].

Nageia wallichiana (C.Presl) Kuntze is a highly valued timber tree, other uses of the wood are plywood, veneer, interior finishing and furniture making. Leaves used for coughs and decoction of leaves taken orally by the Nicobarese as treatment for painful joints [17, 19].

Genus: 8.3 *Podocarpus* L' Herit ex Pers.

Derived from Greek words *pous*, *podos* means 'a foot' and *karpos* means 'fruit'; refers to the length of the fleshy stalks of the fruit (*Podocarpus affinis* Seem. *Fl. Vit. 266 1868*.) [10, 42].

Podocarpus neriifolius D. Don a decoction of the leaves is used as a treatment for rheumatism and arthritis. The juice from the leaves is prepared as a remedy against maggot infested sores [19].

Family: 9. Taxaceae Gray.

Name given to the family on the basis of genus '*Taxus* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Taxaceae Gray. *A Natural Arrangement of British Plants 2: 222, 226. 1822*) [59].

Genus: 9.1 *Amentotaxus* Pilger

Derived from Latin words *amentum* means 'a strap, thong, catkin and the genus *Taxus* [Latin name *taxus*, for the Yew tree (Plinius)] (*Amentotaxus formosana* H.L.Li, J. Arnold Arbor. 33: 196 1952) [42].

Leaves and stems of various species of *Amentotaxus* Pilger are being investigated as a potential source of compounds used in anti-cancer drugs [19].

Genus: 9.2 *Cephalotaxus* Sieb. & Zucc. ex Endl.

Derived from Greek word *kephale* means 'a head' and the genus *Taxus* means 'yew'; referring to the similar appearance of the tree (*Cephalotaxus fortunei* Hook. *Bot. Mag. 76: t. 4499 1850*) [10, 42].

Cephalotaxus mannii Hook.f. produces high quality insect resistant timber which is used for quality furniture, fine crafts and tool handles. The seeds and bark have medicinal uses in the treatment of leukaemia and lymphoma [29].

Genus: 9.3 *Taxus* L.

Derived from Latin name *taxus* for the yew tree (*Taxus baccata* L. *Sp. Pl. 1040 1753*) [10, 42].

Taxus wallichiana Zucc. consumed as decoctions, herbal tea and juice for treating cold, cough, respiratory infections, indigestion and epilepsy. As poultice, it is used locally on the infected wounds and burns [21, 34]. Its bark and leaves are used to treat rheumatism and the paste made from its bark is used to treat fractures and headaches. Decoction of the stem is used in the treatment of tuberculosis [1]. The bark and leaves of *T. wallichiana* are used in Unani medicine as a sedative, aphrodisiac, and as a treatment for bronchitis, asthma, epilepsy, snake bite and scorpion stings [41]. Young shoots of the plants are used in the treatment of headache, giddiness, feeble and falling pulse, coldness of extremities, diarrhea, and severe biliousness [27].

Family: 10. Taxodiaceae Saporta.

Name given to the family on the basis of genus ' *Taxodium* Rich.' and Latin suffix *aceae* means 'a family' or 'a group' (Taxodiaceae Saporta. *Annales des Sciences Naturelles; Botanique, sér. 5, 4: 44. 1865*) [59].

Genus: 10.1 *Cryptomeria* D. Don

Derived from Greek words *krypto* means 'to hide', *kryptos* means 'hidden' and *meris* means 'a portion, part'; refers to the seeds and all flower parts are concealed by the bracts (*Cryptomeria japonica* (Thunb. ex L.f.) D.Don, *Trans. Linn. Soc. London 18: 167 1841*) [10, 20, 42].

Cryptomeria japonica (Thunb. ex L.f.) D.Don leaves are very aromatic and used as incense sticks. The wood is strongly rot resistant and used for buildings, bridges, ships, lamp posts, furniture, utensils and paper manufacture. The wood can be used as a substitute for Deal wood [6, 25, 30, 60, 62].

Genus: 10.2 *Cunninghamia* R. Br. ex Rich. & A. Rich.

Name given in the honour of Scottish naturalist, James

Cunningham (*Cunninghamia konishii* Hayata. *Gard. Chron. III, 43: 194 1908*) [42].
Cunninghamia lanceolata (Lamb.) Hook. used as antidote and carminative. A decoction of the wood is used in the treatment of varnish poisoning, chronic ulcers, hernia etc. An essential oil from the plant is used to treat bruises, pain, rheumatism and wounds. The ash of the bark is used to treat burns, scalds and wounds. A decoction of the cone is used in the treatment of coughs [13, 51].

Genus: 10.3. *Metasequoia* Hu & W.C. Cheng
Derived from Greek word *meta* means 'changed, next to, between' and the genus *Sequoia* (named for Sequoia, a famous Native American of the Cherokee tribe) (*Metasequoia disticha* (Heer) Miki. *Jap. J. Bot. 11: 261 1941*) [10, 42].
Metasequoia glyptostroboides Hu & W.C.Cheng an extensive root system and so they are used to stabilize river banks and paddy field walls [33].

Genus: 10.4. *Sequoiadendron* J. Buchholz
Resembling the genus *Sequoia* [Name given in the honour of George Gist (George Guess or Gess) (also known as Soquoiah, Sequoyah, Sequoiar, Sequoiah, Sequoia, Sequoya, Se-Quo-Yah) (1760/1770-1843), the creator of the Cherokee alphabet and writing system; *sikwayi* is the Cherokee name for the opossum] and Greek word *dendron* means 'tree' (*Sequoiadendron giganteum* (Lindl.) J.Buchholz. *Amer. J. Bot. 26: 536 1939*) [10, 20, 42].
Sequoiadendron giganteum (Lindl.) J. Buchholz wood is very light, soft and durable used for shingle, construction and fence posts etc [39].

Genus: 10.5 *Sequoia* Endl.
Name given in the honour of Sequoyah, Sequoia, who invented the Cherokee alphabet and writing system, also known as George Gist, a famous native American of the Cherokee tribe (1770-1843) (*Sequoia sempervirens* (D. Don) Endl. *Syn. Conif. 198 1847*.) [10, 20, 42].
Sequoia sempervirens (D. Don) Endl. poultice of the heated leaves has been used in the treatment of earaches. The gummy sap has been used as a stimulant and tonic in the treatment of rundown conditions [31].

Genus: 10.6. *Taxodium* Rich.
Resembling the genus *Taxus* (Latin name *taxus* for the yew tree) and the Greek word *oides* means 'resemblance'; referring to the leaves (*Taxodium distichum* (L.) Rich. *Ann. Mus. Hist. Nat. 16: 298 1810*) [10, 20, 42].
Taxodium distichum (L.) Rich. The Aztecs used resin from or pieces of burnt bark topically to treat burns and sore [26]. The leaves and seeds used to treat malaria and liver diseases and various parts of the tree have been used to prepare ointments or infusions for heart disease, hemorrhoids, gout, ulcers, bronchitis, diarrhea and have properties of antibacterial, antifungal, antitumor and antispasmodic [9, 52].

Family: 11. Welwitschiaceae Caruel.
Name given to the family on the basis of genus '*Welwitschia* Hook. f.' and Latin suffix *aceae* means 'a family' or 'a group' (Welwitschiaceae Caruel. *Nuovo Giornale Botanico Italiano 11: 17–18. 1879*) [59].

Genus: 11.1 *Welwitschia* Hook. f.
Name given in the honour of Austrian physician, naturalist, traveler and Director of Lisbon Botanic Garden, Dr. Friedrich Martin Josef Welwitsch (1806-1872 AD) (*Welwitschia mirabilis* Hook.f. *Gard. Chron. 1862: 71 1862*) [10, 20, 42].
Welwitschia mirabilis Hook.f. known as "onion of desert" because indigenous people eat core of the plant. It can be used either raw or as a part of cooked meal. Antelopes and Rhinos eat leaves and soft parts of the stem to obtain water [50].

Family: 12. Zamiaceae Horan.
Name given to the family on the basis of genus '*Zamia* L.' and Latin suffix *aceae* means 'a family' or 'a group' (Zamiaceae Horan. *Primae Lineae Systematis Naturae 45. 1834*) [59].

Genus: 12.1 *Bowenia* Hook.
Name given in the honour of the Irish-born, Governor successively of Queensland, New Zealand, Victoria, Mauritius, and Hong Kong, Sir Goerge Ferguson Bowen (1821-1899) (*Bowenia spectabilis* Hook. *Bot. Mag. 89: t. 5398 1863*) [10, 42].
Bowenia spectabilis Hook. yam-like rhizomes are eaten by the Aborigines [19].

Genus: 12.2. *Dioon* Lindl.
Derived from Greek words *dis* means 'twice' and *oon* means 'egg'; referring to the paired seeds (*Dioon edule* Lindl. *Edwards's Bot. Reg. 29(Misc.): 59 1843*) [10, 20, 42].
Dioon edule Lindl. seed can be eaten boiled or roasted. A starch can be extracted from the seed - called Mexican arrowroot, it is used in tortillas. A decoction of the seeds is used to treat neuralgia [19].

Genus: 12.3 *Encephalartos* Lehm.
Derived from Greek words *en* means 'within, in', *kephale* means 'a head' and *artos* means 'bread'; some parts of the top of the trunks of these plants are farinaceous and edible, the stems are a source of sago (*Encephalartos altensteinii* Lehm. *Nov. Stirp. Pug. 6: 11 1834*.) [42].
Encephalartos woodii Sander. Used cycad trunks as a source of food [35].

Genus: 12.4 *Lepidozamia* Regel
Derived from Greek words *lepis*, *lepidos* means 'scale' and the genus *Zamia* [Latin word *zamia* means 'parched-one, *zamia* (a name in Pliny refers to the sterile appearance of the staminiferous cones, dried up)] (*Lepidozamia peroffskyana* Regel. *Bull. Soc. Imp. Naturalistes Moscou 30(1): 182, 1857*) [20, 42].
Lepidozamia peroffskyana Regel a popular ornamental and aboriginal use for food [5].

Genus: 12.5 *Microcycas* A. DC.
Derived from Greek word *mikros* means 'small' and the genus *Cycas* (Greek name for a kind of palm, *kykas*, *koikas*, *koix*) (*Microcycas calocoma* (Miq.) A.DC. *Prodr. 16(2): 538, 1868*) [10, 42].
Microcycas calocoma (Miq.) A.DC. used as ornamental plant and its toxic roots are used as a rat poison [64].

Genus: 12.6 *Macrozamia* Miq.
Derived from Greek word *makros* means 'large' and the

genus *Zamia* (Latin word *zamia* or *samia* means ' parched-one, dried up, hurt, loss, damage, detrimentum,' or from *azaniae nuces* (Greek *azano* means 'to dry up'), used by Plinius for a kind of pine-cone or pine-nuts) (*Macrozamia concinna* D.L. Jones. *Fl. Australia 48: 718, 1998*) [10, 42].

Macrozamia concinna D.L. Jones used as ornamental plant [23].

Genus: 12.7 *Stangeria* T. Moore

Name given in honour of British physician, Surveyor General of Natal and geologist, William Stanger (1811-1854) (*Stangeria eriopus* (Kunze) Baill. *Hist. Pl. 12: 68, 1892*.) [20, 42].

Stangeria eriopus (Kunze) Baill. is extensively used by the Xhosa and Zulu people for medicinal purposes, especially the root which is used as a purgative and in the treatment of headaches. Xhosa women with babies wear a necklace of *Stangeria* root pieces. It is applied to damaged teats of cattle [66].

Genus: 12.8. *Zamia* L.

Derived from Latin word *zamia* or *samia* means 'parched-one, dried up, hurt, loss, damage, detrimentum,' or from *azaniae nuces* (Greek *azano* means 'to dry up'), used by Plinius for a kind of pine-cone or pine-nuts (*Zamia angustifolia* Jacq. *Collectanea 3: 263, 1791*) [10, 20, 42]. *Zamia* species are used in Brazil as an antidote to snakebite [44].

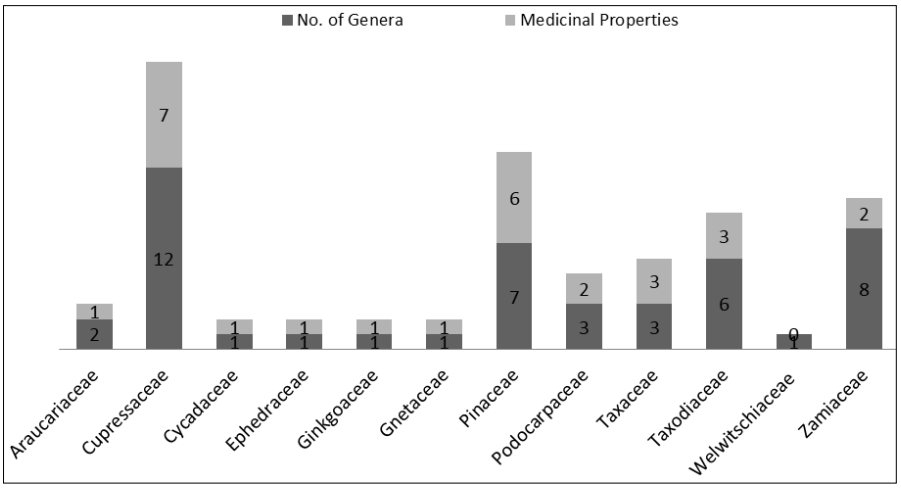

Fig 1: Gymnosperms in India

Conclusion

Families name are plural adjectives used as noun; formed by adding the suffix *-aceae* to the stem, which is the name of an included genus i.e. Araucariaceae (Genus *Araucaria* + suffix *aceae*). Genus etymologies are on the basis of morphological characters (*i.e. Cryptomeria*), honour of person (*i.e. Stangeria, Cunninghamia*), special features (*i.e. Agathis, Platycladus*), place of discovery (*i.e. Taiwania*), combination of Greek and Latin words (*i.e. Taxodium, Cedrus*), resemblance (*i.e. Macrozamia, Thujopsis*) or based on vernacular name (*i.e. Nageia, Tsuga, Gnetum*). Gymnosperm in India have 46 genera belonging to 12 families, 26 out of 46 have medicinal properties, 12 have timber value and 18 show other properties like ornamental, edible or religious etc.

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