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A review on medicinal plants used as anti-inflammatory agents

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Abstract

Medicinal plants are gaining much interest recently because their use in ethno medicine treating common diseases such as cold, fever, diarrhoea, cough and other medicinal claims are now supported with sound scientific evidences. Several plants with various properties have been mentioned earlier in the oldest Indian mythology Rigveda and Ayurveda, thus the use of medicinal plants in India dates back to 3500-1800 B.C. The inflammatory process may be defined as a sequence of events that occur in response to noxious stimuli, infection or trauma. Medicinal plants are used over the use of Non-steroidal anti-inflammatory drugs (NSAIDs). The main factor that limits the use NSAIDs is their gastrointestinal toxicity. The present review gives an introduction to some medicinal plants having anti-inflammatory activity, botanical name, plant family along with their common name, parts used, plant constituents, action/uses.

Keywords: Medicinal plants, ethno pharmacology, anti-inflammatory, plant parts, uses

Introduction

The inflammatory process may be defined as a sequence of events that occur in response to noxious stimuli, infection or trauma^[2]. The signs of inflammation are local redness, swelling, pain, heat and loss of function. The events of inflammation that underline these manifestations are induced and regulated by a large number of chemical mediators, including kinins, eicosanoids, complement proteins, histamine and monokines^[3].

NSAIDs are the most commonly used drugs worldwide. They are prescribed for orthopaedic conditions such as osteoarthritis, soft tissue injuries and fracture etc. NSAIDs are one of the best classes of drug to prevent and treat postoperative pain^[4].

The use of NSAIDs is associated with many side effects, but their unwanted effects on the gastrointestinal tract, kidney and cardiovascular system are considered as major issues with the use of these drugs^[5]. The greatest disadvantage in presently available potent synthetic drugs in their toxicity and reappearance of symptoms after discontinuation. Therefore, the screening and development of drug for their anti-inflammatory activity is the need of hour and there are many efforts for finding anti-inflammatory drugs from indigenous medicinal plants^[6].

Unlike modern allopathic drugs which are single active components that target one specific pathway, herbal medicines work in a way that depends on an orchestral approach^[7]. Medicinal plants have been a source of wide variety of biologically active compounds for many centuries and use extensively as crude material or as pure compounds for treating various disease conditions^[8]. Medicinal plants play an important role in the development of potent therapeutic agents. There are over 1.5 million practitioners of traditional medicinal system using medicinal plants in preventive, promotional and curative applications^[9]. India with its biggest repository of medicinal plants in the world may maintain an important position in the production of raw materials either directly for crude drugs or as bioactive compounds in the formulation of pharmaceuticals and cosmetics etc^[10]. Natural products with anti inflammatory activity have long been use as a folk remedy for inflammatory conditions such as fever, pain, migraine and arthritis. As the inflammatory basis of disease becomes clear, anti-inflammatory food and food products become of greater interest^[11]. A brief description of common anti-inflammatory activity possessing medicinal plants from Ayurveda are mentioned in following table.

Conclusion

Inflammation is a defense mechanism of the body and inflammation is a healthy process resulting from some disturbance or disease. But in some conditions when negative effect of the inflammatory process is produced example, these inflammatory disorders are rheumatoid arthritis, osteoarthritis, inflammatory bowel diseases, retinitis, multiple sclerosis, psoriasis and atherosclerosis.

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To overcome these problems anti-inflammatory agents are mostly require. For this purpose, variety of safe and effective anti-inflammatory agents are available, including aspirin and other nonsteroidal anti-inflammatories, with many more drugs

under development. Therefore these agents are very helpful to reduce the inflammatory response. These agents are called anti-inflammatory agents.

Table 1: Anti-inflammatory activity of some medicinal plants. (Refer attachment)

Sr. No	B Botanical Name	Plant/Family	Common Name	Parts Used	C Constituents	Action / Uses
1	<i>Abutilon indicum</i>	Malvaceae	Kanghi	Bark, root, seed, leaves, flower.	Tannins, organic acid, ash, Chlorides.	Anthelmintic, diuretic, Antipyretic, expectorant.
2	<i>Acacia catechu</i>	Mimosaceae	Katha	Bark, wood, flowering tops, gum.	Tannin, gum, catechuic acid	Anthelmintic, antipyretic, inflammation, bronchitis.
3.	<i>Allium sativum</i>	Liliaceae	Lasun	Bulb, tuber, oil	Acrid volatile oil, starch, albumen.	Inflammation, anthelmintic, diuretic, carminative, antiseptic.
4.	<i>Azadirachta indica</i>	Meliaceae	Neem	Leaf, root, seed, gum, fruit, flower, oil.	Margosine, bitter oil, azadirachtin.	Lessening inflammation, anthelmintic, carminative, astringent, expectorant, stomachic.
5.	<i>Bombax ceiba</i>	Bombaceae	Shembal	Leaf, Root, seeds	Oil, tannic acid, gallic acid.	Anthelmintic, carminative, stomachic, diuretic, purgative, laxative, emetic.
6.	<i>Beta vulgaris</i>	Chenopodiaceae	Beet	Root leaves	Betin.	Carminative, emmenagogue, Diuretic, inflammation.
7.	<i>Borassus flabellifer</i>	Palmae	Tad	Root, flowering stalk, rind, exudate, fruits.	Gum, fat.	Expectorant, diuretic, anthelmintic, inflammatory affections, expectorant.
11.	<i>Bryophyllum calycinum salisb</i>	Crassulaceae	Panfutti	Leaf-juice, bark.	Malic, Isocitric, Citric acid.	Astringent, antiseptic, analgesic, carminative, inflammation.
12.	<i>Caesalpinia crista</i>	Caesalpinaceae	Gajaga	Seeds, root, leaf, root bark.	Oleic, linoleic, palmitic, stearic acid, phytosterols.	Antispasmodic, anti-inflammatory, antipyretic, Anthelmintic, antipyretic.
13	<i>Calotropis gigantea</i>	Asclepiadaceae	Rhui	Root, plant, flower, juice, bark	Glucosides, calotropin, calotoxin, milky latex, mudarine.	Purgative, anthelmintic, Expectorant, inflammation, Asthma, scabies, ringworm, Stomachic, leukoderma.
11	<i>Cassia angustifolia</i>	Caesalpinaceae	Shona makhi	Pods, dried leaves.	Emodin, eatharitin, senna-picrin, mucilage, oleanic acid.	Laxative, purgative, skin diseases, inflammatory condition, bronchitis, fever, gout, jaundice, typhoid.
12	<i>Celosia argentea</i>	Amaranthaceae	Kurdu	Seeds	Not reported	Antipyretic, blood diseases, Kidney stones, reduce inflammation.
13	<i>Cinnamomum zeylanicum</i>	Lauraceae	Dalchini	Stem bark	Resin, volatile oil, linalon, cinnamomum, tarmin sugar, starch, ash	Astringent, antiseptic, haemostatic, inflammation, stimulant, stomachic, diuretic.
14	<i>Clitoria ternatea</i>	Not reported	Gokuran	Roots, leaves, seeds.	Fixed oil, tannin.	Anthelmintic, diuretic, cathartic, leukoderma, inflammation, bronchitis.
15	<i>Coriandrum sativum</i>	Umbelliferae apiaceae	Dhania	Leaf, bark, flower, mucilage of fruit	Tannin, catharin, albuminoids, mallic acid, catharin.	Carminative, stomachic, anti-inflammation, jaundice, diuretic, bronchitis, indigestion, scabies.
16	<i>Cucurbita maxima</i>	Cucurbitaceae	Lal bhopl	Fruits seeds.	Organic acid, vit.C, alpha-spinasterol	Diuretic, emollient, anthelmintic, in inflammation.
17	<i>Cuminum cyminum</i>	Umelliferae	Jeera	Seed, fruit, Oil, flower.	Thymine, thymol, oil, resin, gum.	Carminative, astringent, stomachic, inflammations, asthma, ulcer, fever, increasing appetite.
18	<i>Curcuma longa</i>	Zingiberaceae	Haldi	Tuber, rhizome.	Alkaloid, curcumin, turmeric oil, turmerol, turpenoids, curamone.	Inflammation, cough, cold, gastric disorder, scabies, leukoderma, swelling, ringworm, snake-bite, respiratory disorder.
19	<i>Cuscuta reflexa</i>	Convolvulaceae	Amarvela	Plant, seed, fruit, stem.	Cuscutine, flavonoid, glucoside, bergenin, coumarin.	Lessening inflammation, jaundice, headache, paralysis, eye diseases, vomiting, blood purifying.
20	<i>Dalbergia sissoo</i>	Fabaceae	Sisam	Roots, leaves, bark.	Not reported	Anti-inflammatory, anthelmintic, diuretic, stimulant, scabies, ulcer, bronchitis, leukoderma.
21	<i>Desmodium gangeticum</i>	Fabaceae	Sarivan	Roots.	Yellow resin, oil, kshar, ash-6 %	Nervine tonic, anorexia, anti-inflammatory, expectorants, tonic, cardio tonic.
22	<i>Dichrostachys cinereal</i>	Mimosaceae	Segum-kati	Roots, tender shoot.	Not reported.	Anti-inflammatory, thermogenic, neuropathy, diuretic, astringent, anodyne.
23	<i>Drypetes roxburghii</i>	Euphorbiaceae	Putrajivah	Leaves, seeds.	Not reported.	Anti-inflammatory, diuretic, laxative, refrigerant, fever, constipation.
24	<i>Emblica officinalis</i>	Euphorbiaceae	Amla	Root, bark, leaves, fruits.	Linoleic acid, Ellagic acid lupeol.	Astringent, stomachic, antipyretic, laxative, carminative, inflammation, anaemia, asthma, cough.
25	<i>Enicostema littorale</i>	Gentianaceae	Kadavinayi	Whole plant.	Alkaloids, gentiocrucine	Anti-inflammatory, anthelmintic, laxative, carminative, liver tonic, colic.
26	<i>Erythrina variegata</i>	Papilionaceae	Pangara, mandar	Leaves, bark, roots, flower.	2- Hydroxygenistein, Genistein.	Anti-inflammatory, antimicrobial, antiulcer, antiviral, antitumor, antioxidant, anthelmintic.
27	<i>Euphorbia hirta</i>	Euphorbiaceae	Dudhi	Plant, roots, leaves	Ascorbic acid, beta-amyrin, choline, inositol, linoleic-acid, beta-sitosterol.	Anti-inflammatory, antihistaminic, antioxidant, antitumor, antipyretic, antiseptic, antiviral, antiulcer, analgesic, antiobesity.
28	<i>Euphorbia tirucalli</i>	Euphorbiaceae	Vajraduhu	Root, plant (milk, juice).	Beta-sitosterol, Ellagic-acid, mallic acid, citric acid,	Anti-inflammatory, antibacterial, carminative, Anti -infertility,pesticide, antitumor (cervix,

					eupholglucose.	lung), antimutagenic, purgative.
29	<i>Fagonia cretica</i>	Zygophyllaceae	Damahan	Whole plant, leaves, twigs, bark.	Betulin.	Astringent, emmenagogue, Antitumor, antiviral, anti-inflammatory, anticarcinomic, asthma, fever, stomatitis, leukoderma.
30	<i>Ficus benghalensis</i>	Moraceae	Wad	Aerial roots, bark, seeds, leaves, buds, fruits, latex.	Skin, fruits contain 10% tannin.	Anti-inflammatory, anti-diarrhoeal, antiemetic, tonic, haemoptysis, dysentery, diarrhoea, skin diseases, haemorrhages, ulcer, styptic, abscesses.
31	<i>Ficus carica</i>	Moraceae	Anjir	Fruit, root.	Alkaloids, Ascorbic acid, Caffeic-acid, Niacin, Linoleic acid, Lutein, Beta-carotene, Pantothenic-acid, Beta-Amyrin.	Antihistaminic, Anticold, Antihepatitic, Antiseptic, Antispasmodic, Hypotensive, Antiinfertility, Antimigraine, Carciogenic, Anticold, Insecticide, Antiasthmatic, Anti-inflammatory.
32	<i>Ficus religiosa</i>	Moraceae	Pimpala	Bark, leaves, fruits, tender shoots, seeds, latex.	Bark contain tannins, rubber and wax.	Astringent, purgative, anthelmintic, expectorants, inflammation, asthma, diarrhoea, dysentery, ulcers, stomatitis, hemorrhages.
33	<i>Foeniculum vulgare</i>	Apiaceae	Shepu	Fruit, root, seeds, leaves.	Ascorbic-acid, Estragole, coumaric-acid, Caffeic-acid, Alpha-terpinene, Scoparone, Scopoletin, Cynarin, D-imonene, Alpha-phellandrene.	Antidiabetic, antihistaminic, anticapillary, anticonvulsant, antihypertensive, antitumor, anti-inflammatory, antibacterial, antioxidant, carminative, diuretic, appetizer, anthelmintic.
34	<i>Gentiana kuroo</i>	Gentianaceae	kadu	Rhizomes (roots)	Gentiopicrine and gentianic acid	Anti-inflammatory, anthelmintic, sialagogue, emmenagogue, diuretic, carminative, galactopurifier, colic, constipation, ulcers, haemorrhoids, leprosy, fever.
35	<i>Gloriosa superba</i>	Liliaceae	Karihari, languli	Rhizome, tuber, leaves, flower	Choline, colchicine, stigmasterol, 2- emethyl-colchicine, Beta-Lumicol-chicone, 6-Methoxy-Salicylic-Acid.	Anti-inflammatory, antimalarial, antibacterial, antipyretic, Antidermatitic, anthelmintic, antipyretic, expectorant, helminthiasis, skin diseases, leprosy, fever.
36	<i>Glycyrrhiza glabra</i>	Papilionaceae	Jesthamadha	Roots, leaves.	Genistein, Eugenol, Glycyrrhizin, Estragole, Camphor, Ascorbic-acid, Apigenin, Anethole, Bergapten, Acetophenone.	Anti-inflammatory, antibacterial, antioxidant, antiseptic, antiulcer, expectorants, antioxidant, anti HIV, Immunosuppressant.
37	<i>Gmelina arborea</i> Roxb.	Verbenaceae	Gambhari	Whole plant.	Betulin.	Anti-inflammatory, Anthelmintic, Laxative, Antitumor, Antiviral, Stomachic, astringent, anaemia, skin diseases, leprosy.
38	<i>Gossypium herbaceum</i>	Malvaceae	Kapus	Roots, leaves, Flower, seeds.	Seed contain 10 to 29 % oil.	Astringent, diuretic, laxative, expectorants, antipyretic, all kind of inflammation, anaemia, diarrhoea, Dysentery, jaundice.
39	<i>Grewia asiatica</i>	Tiliaceae	Phalsi	Fruits, bark, Leaves, roots.	Betulin.	Anti-inflammatory, antitumor, antiviral, Astringent, stomachic, Anticarcinomic.
40	<i>Gymnema sylvestre</i>	Asclepiadaceae	Kavali	Whole plant	Leaves-resin, gymnemic acid, tartaric acid, enzymes.	Inflammation, constipation, haemorrhoids, asthma, cough, fever, bronchitis cardiotoxic, expectorant, laxative, anthelmintic.
41	<i>Hibiscus rosasinensis</i>	Malvaceae	Jaswand	Buds, roots, leaves, flower	Quercetin, Ascorbic-acid.	Antihistaminic, antipyretic, anti-inflammatory, antibacterial, antiabietic, analgesic, antihypertensive, astringent, cardiotoxic.
42	<i>Hygrophila auriculata</i>	Acanthaceae	Palmakhana, Barleria.	Roots, leaves, seeds.	palmitic, stearic, Oleic and linoleic acids in seed oil.	Anti-inflammatory, diuretic, stomachic, nerve tonic, anaemia, dysentery, gout, jaundice, liver tonic, cough, arthritis.
43	<i>Justicia gendarussa</i>	Acanthaceae	Nilinirgundi	Roots, leaves.	2 Amino benzyl- Alcohol, Beta-sitosterol.	Anti-inflammatory, emetic, expectorant, insectidal, thermogenic, bronchitis, ascites, cough.
44	<i>Lablab purpureus</i>	Papilionaceae	Pavta	Leaves, seeds.	g-Glutamylphelylalanin.,	Diuretic, laxative, galacpagogue, stomachic, in inflammation.
45	<i>Lannea coromandelica</i>	Anacardiaceae	Moi shimti	Bark, leaves.	Not reported.	Astringent, thermogenic, stomachic, diarrhoea, dysentery, gout, ulcers, sprains, inflammation.
46	<i>Leucas aspera</i>	Lamiaceae	Dronapuspi	Leaves, flower.	Not reported.	Carminative, thermogenic, anthelmintic, anti-inflammatory, antibacterial, expectorant, antipyretic.
47	<i>Linum usitatissimum</i>	Linaceae	Javas	Flowers, seeds, oil.	Beta-carotene, choline, chromium, oleic-acid, linoleic-acid, alpha-tocopherol, pantothenic-acid.	Cardiotonic, expectorant, diuretic, astringent, laxative, demulcent, diarrhoea, antiulcer, local inflammation.
48	<i>Manihot esculenta</i>	Euphorbiaceae	Sakkarhand	Tuberous roots.	Ascorbic-acid, lauric-acid, oleic-acid, palmitic-acid, stearic-acid.	Analgesic, antibacterial, anticataract, antihepatic, antihistaminic, anti-inflammatory, antimigraine.
49	<i>Martynia annua</i>	Pedaliaceae	Vinchu	Fruits, leaves.	Pelargonidin-3, 5- diglucoside, cyanidin-3-galactoside, semidrying oil.	Anti-inflammation, sore throat.
50	<i>Maytenus emargiata</i>	Celastraceae	Yekaddi	Fruit, stem, bark, leaves, roots.	Tingenone, betulin, hexacosane, b-sitosteol.	Inflammation, ulcer, piles, burning, corneal opacity.
51	<i>Mitragyna parvifolia</i>	Rubiaceae	Kalamb	Root, Bark Leaves.	Not reported.	Colic, wound, flatulence, haemorrhage, inflammation. fever, skin diseases.
52	<i>Momordica charantia</i>	Cucurbitaceae	karle	Whole plant	5-hydroxytryptamine, alkaloids, ascorbic-acid, beta-carotene, cholesterol, lutein, diosgenin, lanosterol, lycopene, momordicin, niacin, momordicoside, charantin.	Anthelmintic, antipyretic, carminative, digestive, purgative, carminative, stomachic, anti-inflammatory, emetic, antidiabetic, appetizing, emmenagogue.
53	<i>Moringa oleifera</i>	Moringaceae	Shevgi	Roots, bark, leaves, seeds.	Ascorbic-acid, beta-carotene, choline, moringinine, myristic-acid, niacin, oleic-acid, spirochin,	Anti-inflammatory, Digestive, carminative, anthelmintic, constipating, diuretic, antifungal, heamatinitic, antipyretic, expectorant, rich in

					stearic-acid, tocopherol, vanillin.	vitamin A and vit. C.
54	<i>Musa paradisiaca</i>	Musaceae	kela	Root, fruit, leaves, stem, sap	Carbohydrate, minerals (calcium), vitamins.	Anthelmintic, tonic, astringent, antidiarrhetic, fruits-bronchitis, leprosy, thirst, vaginal, urinary discharge, leaves-scabies, in-inflammation.
55	<i>Nelumbo nucifera</i>	Nymphaeaceae	Kamal	Whole plant.	Anonaine, ascorbic-acid, beta-carotene, copper, erucic-acid, glutathione, hyperoside, myristic-acid, nuciferine, oxoushinsunine, rutin, stearic-acid, trigonelline, kaempferol, d-catechin.	Astringent, diuretic, anthelmintic, cardiogenic, emollient, antifungal, used in- ringworm, in inflammation, fever, leprosy, skin diseases, diarrhoea, cholera, cough, bronchitis, vomition
56	<i>Nicotiana tobacum</i>	Solanaceae	Tamabaku	Leaves.	1,8-cineole, 4-vinyl-guaiacol, acetaldehyde, acetophenone, alkaloids, anabasin, nicotinic-acid, nicotine, scopoletin, quercitrin, sorbitol, stigmasterol, tocopherol, trigonelline.	Thermogenic, sedative, narcotic, anodyne, anti-inflammatory, anthelmintic, carminative, emetic, styptic, laxative, trigonelline, mental
57	<i>Nigella sativa</i>	Ranunculaceae	Kalajira	Seeds.	Alpha-spinasterol, ascorbic-acid, beta-sitosterol, carvone, d-limonene, linoleic-acid, myristic acid, methionine, nigellone, stearic-acid, stigmasterol, tannin, thymoquinone, hederagenin.	Anti-inflammatory, stimulant, digestive, anthelmintic, expectorants, galactagogue, constipating, carminative, emmenagogue, anodyne, thermogenic.
58	<i>Nyctanthes abortivis</i>	Oleaceae	Parijat	Leaves, flowers, seeds.	Not reported.	Thermogenic, antibacterial, expectorants, digestive, laxative, diuretic, tonic, laxative, cholagogue, anthelmintic, carminative, astringent.
59	<i>Ocimum basilicum</i>	Lamiaceae	Babul	Whole plant	Acetic acid, ascorbic acid, aspartic acid, apigenin, arginine.	Anti-inflammatory, spasmotic, galactagogue, appetizing, cardiogenic, expectorant, diuretic, emmenagogue, antidiarrhetic, stimulant, insecticidal, antipyretic.
60	<i>Oroxylum indicum</i>	Bignoniaceae	Sonapatha, tetu	Roots, leaves, fruits, seeds.	Oroxylum, pectin, fats, wax, chlorophyll, astringent, citric acid.	Anti-inflammatory, anodyne, anthelmintic, expectorant, stomachic, carminative, diuretic, constipating, refrigerant.
61	<i>Oxalis corniculata</i>	Oxalidaceae	Ambuti, bhinsarpati	Whole plant	Potassium, oxalic acid.	Astringent, anti-inflammatory, carminative, antibacterial, vermifuge, emmenagogue, antiseptic, liver tonic, diuretic.
62	<i>Physalis minima</i>	Solanaceae	Chirboti	Whole plant.	Not reported.	Diuretic, laxative, expectorant, appetizing, tonic.
63	<i>Piper longum</i>	Piperaceae	pimpli	Roots, fruits.	Piperogumine, piperlongumminine, piperine, sesamin.	Carminative, laxative, anthelmintic, stomachic, antidiarrhetic, Antidiarrhetic.
64	<i>Plantago ovata</i>	Plantaginaceae	Isabgola	Seeds.	Oil, albumin, mucilage.	Astringent, refringent, laxative, anti-inflammatory, expectorant, antidiarrhetic, diuretic, anticholesterol.
65	<i>Plumbago zeylanica</i>	Plumbaginaceae	Chitraka	Root, leaves, root, bark.	Plumbagin, 3-chloroplumbagin, chitranone, zeylinone, isozeylinone, elliptone, droserone.	Stomachic, expectorant, astringent, anthelmintic, carminative, appetizer, anti-inflammatory.
66	<i>Portulaca oleraceae</i>	Portulacaceae	Mhotighol.	Stem, leaves, seeds.	Oleracins I and II, acylated betacyanins, mucilage, carbohydrate, galacturonic acid.	Stomachic, antibacterial, thermogenic, jaundice, diabetes, scalds, burn, skin diseases, Anti-inflammation.
67	<i>Pterocarpus marsupium</i>	Fabaceae	Bibla	Heart wood, leaves, flower, gum	Alkaloids, gum, essential oil, semidrying fixed oil.	Anti-inflammatory, urinary astringent, hemostatic, anthelmintic, constipating, anodyne, gum-styptic, antipyretic, Liver tonic.
68	<i>Raphanus sativus</i>	Brassicaceae	Mula	Roots, leaves, seeds.	Arginine, ascorbic acid, aspartic acid, alanine, caffeic acid, arsenic.	Appetizing, digestive, stomachic, antibacterial, laxative, anodyne, depurative.
69	<i>Ricinus communis</i>	Euphorbiaceae	Erandi	Root, leaves, seeds, flowers, oil.	Sugar, ricin, white juice, ricin contain-palmitin, sterine.	Carminative, anthelmintic, emollient, Diuretic, astringent, galactagogue, expectorant.
70	<i>Rubia cordifolia</i>	Rubiaceae	Manjeshtha	Roots.	Starch, sugar, gum, colouring matter, common salts, oil.	Anti-inflammatory, anti-septic, anodyne, constipating, anti-dysenteric, anthelmintic, carminative, diuretic, galactopurifier.
71	<i>Semecarpus anacardium</i>	Anacardiaceae	bhilava	Fruits.	32% vesicating oil	Astringent, emollient, digestive, carminative, anti-inflammatory, cardiogenic, antiseptic.
72	<i>Solanum melongena</i>	Solanaceae	Vangi	Roots, leaves, tender fruits.	Ascorbic acid, alanine, arginine, caffeic acid.	Laxative, analgesic, Narcotic, cardiogenic, sialagogue, haematinic.
73	<i>Solanum nigrum</i>	Solanaceae	Makoi	Whole plant.	Solenin, solasodine,	Anti-inflammatory, expectorant, anodyne, diuretic, digestive, laxative, cardiogenic, emollient.
74	<i>Solanum surattense</i>	Solanaceae	Bhui-ringni	Whole plant	Not reported.	Anthelmintic, anti-inflammatory, stimulant, anodyne, digestive, thermogenic.
75	<i>Stereopermum suaveolens</i>	Bignoniaceae	Padal	Roots, flower	Mucilage, albumin, sugar, wax, lapachol, dehydroctol, beta sitosterol, n-triacontanol.	Anti-inflammatory, in vomiting, asthma, fever, diseases of blood, fruit-hiccough, leprosy, strangury.
76	<i>Streblus asper</i>	Moraceae	Daheya	Roots, bark, leaves, latex.	Not-reported.	Anti-inflammatory, haemostatic, thermogenic, antiseptic, constipating, thermogenic, anticonvulsant.
77	<i>Swertia chirayita</i>	Gentianaceae	Chirayita	whole plant	Ophelic acid, glycoside, resin, gum, resin, potash, carbonate, phosphate, lime, magnesium.	Anti-inflammatory, antipyretic, thermogenic, antiperiodic.

78	<i>Tamarindus indica</i>	caesalpiniaaceae	Chinch	Roots, leaves, Fruits	Tartaric, citric, malic, acetic, potassium tartarate. etc. seed-63% carbohydrate	Astringent, anthelmintic, thermogenic, constipating, anodyne, antifungal, diuretic, stomachic
79	<i>Taraxacum officinale</i>	Asteraceae	Kanphul	Whole plant	Latex contain taranacin and taraxacerin. Root-inulin 25% besides pectin and starch.	Anti-inflammatory, anthelmintic, thermogenic, digestive, stomachic, stimulant.
80	<i>Tectona grandis</i>	Verbenaceae	Sagaun	Whole plant	Not reported.	Anti-inflammatory, anthelmintic, astringent, emollient, diuretic, demulcent, haemostatic.
81	<i>Tephrosia purpurea</i>	Fabaceae	Unhali	Whole plant	Tephrosin, betulinic acid, lupeol, rutin.	Anti-inflammatory, uterine tonic, digestive, laxative, anthelmintic, styptic, anti-pyretic.
82	<i>Terminalia arjuna</i>	Combretaceae	Arjun sadada	bark	Not reported	Anti-inflammatory, astringent, styptic, urinary astringent, expectorant, dysenteric.
83	<i>Terminalia belirica</i>	Combretaceae	Beheda	Bark, fruits.	Not reported.	Anti-inflammatory, thermogenic, anthelmintic, expectorant, antiemetic, narcotic, styptic, anodyne, astringent.
84	<i>Terminalia chebula</i>	Combretaceae	Hirda	Mature, immature fruits.	Ascorbic acid, Gallic acid, Ellagic acid, Chebulic acid.	Carminative, anti-inflammatory, stomachic, laxative, purgative, antiseptic, diuretic, cardiotoxic.
85	<i>Thespesia populnea</i>	Malvaceae	Bhendi	Whole plant	Gossypol, Herbacetin, kaempferol.	Astringent, anti-inflammatory, haemostatic, antibacterial, antidiarrhoeal.
86	<i>Thespesia populneoides</i>	Malvaceae	Bhendi-Ki-jhar	Whole plant	Populneol, gossypol, kaempferol, quercetin, 5-glucoside, calycopterin, kaempferol-5-glucoside, kaempferol-3-glucoside.	Anti-inflammatory, astringent, haemostatic, antibacterial, antidiarrhoeal.
87	<i>Tinospora cordifolia</i>	Menispermaceae	Gulvel	Stem	Alkaloids, starch.	Anthelmintic, astringent, thermogenic, anti-inflammatory, antiemetic, carminative, expectorant, digestive.
88	<i>Tribulus terrestris</i>	Zygophyllaceae	Lahangokhru	Whole plant	Diuretics.	Anti-inflammatory, anthelmintic, emollient, laxative, appetiser, anodyne, styptic, diuretic.
89	<i>Vernonia anthelmintica</i>	Asteraceae	Kalijira	fruits	Bitter principle, resin, essential oil.	Thermogenic, anthelmintic, astringent, anti-inflammatory, purgative, diuretic, stomachic, demulcent, galactogogue.
90	<i>Vernonia cinereal</i>	Asteraceae	Sahadevi	Whole plant	Linoleic acid, lupeol, vernolic acid.	Diuretic, anthelmintic, anodyne, stomachic, anti-inflammatory, antibacterial, antifungal, antiviral.
91	<i>Vigna radiata</i>	Fabaceae	mug	Roots	Proteins, arachidic acid, arginine, ascorbic acid, genstein, shikimic acid.	Digestive, emollient, constipation, anti-inflammatory, haemostatic, galactogogue.
92	<i>Vitex negundo</i>	Verbenaceae	Nirgundi	Whole plant	Leaves-Volatile essential oil, resin. Fruits- acidic resin, astringent.	Expectorant, anodyne, carminative, anti-inflammatory, digestive, antipyretic, emmenagogue, thermogenic.
93	<i>Zingiber officinale</i>	Zingiberaceae	Adrak	Rhizomes	Essential oil with camphene, beta-philandrene, zingiberene, phellandrene, cineol, gingerol shogaol.	Carminative, digestive, appetizer, astringent, laxative, stomachic, anodyne, expectorant, anthelmintic, carminative, thermogenic.

Plants have played an important role in human health care since the ancient times. Traditional plants play a very important role in the discovery of new drugs. Now present days, inflammation is a very big challenge of mankind. Many of anti-inflammatory drugs are available, but it is believed that these drugs such as opioids and analgesia inducing drugs like NSAIDs are not useful in all cases and these drugs also produce side effects, so to overcome the problems of Drugs, new drug molecule should be discovered from Medicinal plants. The medicinal plants/herbs have many of phytoconstituents and these are helpful in reducing inflammation and have fewer side effects.

References

- Anjaria Jayvir, Mino Parabia, Shailendra Dwivedi. Ethanovet Heritage Indian Ethnoveterinary Medicine - An Overview. Pathik Enterprise, B-8, Akshardham Flats, Harshad Colony Road, Opp. Chirag Diamond, PO. Saijapur, Ahmedabad – 382345, 2002.
- Azwanida NN. A Review on the extraction methods use in medicinal plants, principle, strength and limitation. Faculty of Agriculture, Food and Rural Development (AFRD), Newcastle University, UK. 2015; 4:3.
- Bauri RK, Mary Nisha Tigga, Singray SaleebKullu. A review on use of medicinal plants to control parasites, Indian Journal of Natural Products and Resources. 2015; 6(4):268-277.
- Arya Vikrant, Arya ML. A Review on anti-inflammatory Plant Barks, International Journal of Pharm Tech Research, CODEN (USA): IJPRIF, ISSN: 0974-4304. 2011; 3(2):899-908.
- Calixto JB, Campos MM, Otuki MF, Santos ARS. Anti-inflammatory compounds from plant origin. Part II. Modulation of Pro-inflammatory cytokines, chemokines and adhesion molecules. Planta medica. 2004; 70:93-103.
- Percival M. Understanding the Natural Management of Pain and Inflammation. Clinical nutrition insights. 1999; 4:1-5.
- Luna SPL, Basilio AC, Steagall VMP, Machado LP, Moutinho FQ, Takahira RK, Brandao CVS *et al.* Evaluation of adverse effects of long-term oral administration of carprofen, etodolac, flunixin meglumine, ketoprofen, and meloxicam in dogs. AJVR. 2007; 68(3):258-264.
- Srinivasan K, Muruganandan S, Lal J, Chandra S, Tandan SK, Ravi Prakash V. Evaluation of anti-inflammatory activity of *Pongamia pinnata* in rats. J. Ethnopharmacol. 2001; 78:151-157.
- Alexandrina L, Dumitrescu. Antibiotics and Antiseptics in Periodontal Therapy. Berlin/Heidelberg, Springer verlag, 2010.
- Laloo D, Hemalatha S. Ethnomedicinal plants used for diarrhea by tribals of Meghalaya, Northeast India. Pharmacogn Rev. 2011; 5:147-54.

11. Vashishtha Vishal, Sharma Ganesh N, Gaur Mukesh, Bairwa Ranjan. A review on some plants having anti-inflammatory activity, The Journal of Phytopharmacology. 2014; 3(3):214-221.