



ANALGESIC AND ANTI-INFLAMMATORY PLANTS: AN UPDATED REVIEW

Rupa Sengupta^{*1}, Sonali D Sheorey², Madhuri A Hinge³

ROFEL, Shri G.M.Bilakhia College of Pharmacy, Namdha Road, Vapi-396191 Gujarat, India.

*Corresponding author's E-mail: rupasengupta222@rediffmail.com

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ABSTRACT

The present communication constitutes an updated review on plants with analgesic and anti-inflammatory activity with special emphasis on those plants found in different parts of the world. This article will be helpful to the common people for their primary healthcare and the researchers for further isolation and characterization of the active chemical constituents responsible for analgesic anti-inflammatory potential.

Keywords: Medicinal plants, Analgesics, Anti-inflammatory.

INTRODUCTION

The tribal and rural population of India largely depends on medicinal plants for their health care as well as for their livestock. This attracted the attention of several botanists that lead to an array of reports on ethnomedicine¹The evaluation of these drugs is primarily based on phytochemical, pharmacological and allied approaches including various instrumental techniques such as chromatography, microscopy and others. With the emerging worldwide interest in adopting and studying traditional systems and exploiting their potential based on different health care systems, the evaluation of the rich heritage of traditional medicine is essential.² Drugs which are used presently for the management of pain and inflammatory conditions are either steroidal like corticosteroids or non steroidal like aspirin. All of these drugs possess more or less side and toxic effects like renal failure, allergic reactions, hearing loss or they may increase the risk of haemorrhage by affecting platelet

function.³ On the contrary many medicines of plant origin had been used since ages without any adverse effects. It is therefore essential that efforts should be made to introduce new medicinal plants to develop more effective and cheaper drugs. Plants represent a large natural source of useful compounds that might serve as lead for the development of novel drugs.⁴

It is very important that profound research with ethno botanical plants possessing anti-inflammatory and analgesic properties can definitely open up new vistas in inflammatory disorders. Purified natural compounds from plants can serve as template for the synthesis of new generation anti-inflammatory drugs with low toxicity and higher therapeutic value. This article reviews such medicinal plants with anti-inflammatory and analgesic properties which have been used by our ancestors to cure many of their ailments.

Table 1: Plants having Analgesic and Anti-Inflammatory activity

S. No	Botanical Name (Common Name)	Family	Part used	Chemical Constituent	Activity	Ref
1	<i>Manilkara zapota</i> (Chickoo)	Sapotaceae	Leaves	Alkaloids, flavonoids, steroids, phenolic compounds	Analgesic	5
2	<i>Scoparia dulcis</i> L (Mithi patti)	Scrophulariaceae	whole herb	Alkaloids, carbohydrates, glycosides & tannins	Analgesic	6
3	<i>Ficus racemosa</i> (Udumbar)	Moraceae	fruits	tannins, gums, flavonoids & alkaloids	Analgesic	6
4	<i>Allium stracheyi</i> (Pharna)	Liliaceae	Leaves	steroids, alkaloids, saponin	Analgesic	7
5	<i>Mitragyna parvifolia</i> (kadam)	Rubiaceae	fruits	pyroligneous acid, methyl acetate, ketones and aldehydes	Anti inflammatory, Analgesics	8
6	<i>Murraya paniculata</i> (Orange jasmine)	Rutaceae	bark	coumarins, alkaloids	Analgesic	9
7	<i>Bauhinia racemosa</i> (Asoda)	Caesalpinaceae	Stem bark	Flavonoids, coumarins, triterpenoids, stilbens, steroids.	Analgesic	10
8	<i>Butea monosperma</i> (Palash)	Fabaceae	Leaves	Flavonoids, chalcones, tannins.	Antiinflammatory	11
9	<i>Tectona grandis</i> (sagwan)	Verveneae	Leaves	quinones, steroids, glycosides, flavonoids, alkaloids, saponin	Antiinflammatory	12
10	<i>Nyctanthes arbor-tristis</i> (Shefali)	Oleaceae	Bark	flavonol glycosides, β -sitosterol, nyctanthic acid.	Antiinflammatory, analgesic.	13

Table 1: Plants having Analgesic and Anti-Inflammatory activity (continued..)

S. No	Botanical Name (Common Name)	Family	Part used	Chemical Constituent	Activity	Ref
11	<i>Acacia catechu</i> (Katha)	Leguminosae	bark and stem	Tannins catechin, quercetin, catechuic acid.	Anti-inflammatory	14
12	<i>Clerodendrum phlomidis</i> (Arni)	Verbanaceae	Stem bark	Alkaloids, glycosides, saponins, tannins.	Analgesic	15
13	<i>Phyllanthus niruri</i> (Gulf-leaf flower)	Phyllanthaceae	whole plant	Flavonoids, sterols, alkaloids, phyllanthin, hypophyllanthin.	Antiinflammatory, analgesic.	16
14	<i>Sterculia foetida</i> (Jangli badam)	Sterculiaceae	seeds	Fat, cycloprenoid fatty acids.	Antiinflammatory, analgesic.	17
15	<i>Amaranthus spinosus</i> (Prickly amaranth)	Amaranthaceae	whole plant	α -spinasterols octacosanoate and saponin.	Antiinflammatory	18
16	<i>Hibiscus tiliaceus</i> (Beach Hibiscus)	Malvaceae	Leaves	Vanillic acid, syringic acid, β -sitosterol, Quercitin etc.	Anti-inflammatory	19
17	<i>Plectranthus amboinicus</i> (Maxican mint)	Lamiaceae	Leaves	terpinene, myrcene, limonene, eugenol, carvacrol.	Anti-inflammatory	20
18	<i>Calotropis gigantea</i> s (Crown flower)	Asclepiadaceae	Leaves	Calotropnaphthalene, terpenes.	Anti-inflammatory	21
19	<i>Leucas cephalotes</i> (dronpushpi)	Labiatae	Leaves	Alkaloides, terpenes, stigmasterol ,sterols.	Anti-inflammatory	22
20	<i>Celosia argentea</i> (Lalmurga)	Amaranthaceae	Leaves	Stigmasterol, sitosterol, celosin A and B, fatty acids.	Anti-inflammatory	23
21	<i>Holarrhena antidysenterica</i> (Indrajao)	Apoynaceae	Bark	Alkaloid, Tannins & Flavanoids	Antiinflammatory, Analgesics	24
22	<i>Tridax procumbens</i> (Ghamra)	Asteraceae	leaves	flavonoids, procumbentin and quercetin, β -sitosterol	Antiinflammatory, Analgesics	25
23	<i>Oxalis corniculata</i> (Creeping oxalis)	Oxalidaceae	whole plant	alkaloids, steroid, triterpenoids, tannins, flavonoids	Anti-inflammatory	26
24	<i>Cassia sophora</i> (Kasunda)	Caesalpiniaceae	leaves	flavonoids, glycosides	Anti-inflammatory	27
25	<i>Cissus rependa</i> (Pani bel)	Vitaceae	Root,Stem	Alkaloids, glycosides, saponins, tannins.	Antiinflammatory, Analgesics	28
26	<i>Kaempferia galangal</i> (Aromatic ginger)	(Zingiberaceae)	fresh rhizome	ethyl- p-methoxycinnamate, methylcinnamate, Carvone etc	Antiinflammatory, Analgesics	29
27	<i>Tanacetum artemisioides</i> (Paloyo Zoon)	Asteraceae	whole plant	Flavonoids	Antiinflammatory, Analgesics	30
28	<i>Hedyotis puberula</i> (Surbuli)	Rubiaceae	whole plant	Iridoid glycosides	Antiinflammatory, Analgesics	31
29	<i>Eucalyptus citriodora</i> (lemon eucalyptus)	Myrtaceae	esessential oil	Terpenes, alkaloids, flavonoids, tannins, eucalyptol.	Antiinflammatory, Analgesics	32
30	<i>Chococca brachiata</i>	Rubiaceae	Root	Steroids, phenolic compounds, ligans	Antiinflammatory, Analgesics	33
31	<i>Cynara scolymus</i> (Globe artichoke)	Asteraceae	Leaves	Sesquiterpenes, flavone glycosides, volatile oil.	Antiinflammatory, Analgesics	33
32	<i>Elephantopus scaber</i> (Elephant foot)	Asteraceae	Leaves	Glycosides, stigmasterol, deoxyelephantopin	Antiinflammatory, Analgesics	33
33	<i>Mikania glomerata</i> (sprengel)	Asteraceae	Leaves	Coumarins.	Antiinflammatory, Analgesics	33
34	<i>Trianosperma tayaya</i> (Mart)	Curcubitaceae	Root	Essential oil, diterpenoids, sesquiterpens	Antiinflammatory, Analgesics	33
35	<i>Casearia sylvestris</i> Swartz. (wild coffee)	Flacurteaceae	Leaves and bark	Alkaloids	Antiinflammatory, Analgesics	33
36	<i>Marsypianthes chanaedrys</i> (Konmonmi mawon)	Lamiaceae	Leaves	Essential oil, germacrene D, beta-caryophyllene	Antiinflammatory, Analgesics	33
37	<i>Apuleia Leiocarpa</i> (Grapia)	Leg-ceae	Bark & duramen	Flavons, phytosterols, flavonoids	Antiinflammatory, Analgesics	33
38	<i>Dorstonia brasiliensis</i> (Carapia)	Moraceae	Root	Monoterpenoid substituted furocoumarin, phytosterol.	Antiinflammatory, Analgesics	33
39	<i>Brunfelsia uniflora</i> (Manaca)	Solanaceae	Leaves	Alkaloids-franciscain, manain, scopoletin.	Antiinflammatory, Analgesics	33
40	<i>Bauhinia racemosa</i> (Kachnal)	Caesalpiniaceae	Stem bark	Flavonoids, saponins, glycosides, tannins.	Analgesic	33

Table 1: Plants having Analgesic and Anti-Inflammatory activity (continued..)

S. No	Botanical Name (Common Name)	Family	Part used	Chemical Constituent	Activity	Ref
41	<i>Sida acuta</i> (Bariara)	Malvaceae	whole plant	alkaloids, flavanoids, steroids, tannins, terpenoids	Analgesic	35
42	<i>Stylosanthes fruticosa</i> (Saillekampa)	Papilionaceae	whole plant	alkaloides, flavanoids, saponins, phytosterols, glycosides.	Analgesic	35
43	<i>Toona celiata</i> (Tun)	Meliaceae	Heart wood	Phytosterols, coumarins, carbohydrates.	Analgesic	35
44	<i>Baugainvillea spectabilis</i> (Booganbel)	Nyctaginaceae	Leaves	flavanoids, Alkaloids, tannins, betacyanine, pinitol.	Analgesic	35
45	<i>Ficus glomerata</i> (Cluster Fig Tree)	Moraceae	Bark and leaves	Betasitosterol, lupeol, stigmasterol, leucoanthocyanins.	Analgesic	35
46	<i>Polyalthia longifolia</i> (Devadaru)	Annonaceae	Leaves	Diterpenes, alkaloids.	Analgesic	35
47	<i>Tribulus terrestris</i> (Bindii)	Zygophyllaceae	Aerial	Glycosides, steroidal saponins, alkaloids, flavonoids.	Narcotic analgesic	36
48	<i>Pimpinella anisum</i> (Saunf)	Umbellifera	Seeds	linalol, methylchavicol, 2-terpineol, anethol, p-anisaldehyde	Narcotic analgesic	36
49	<i>Peganum harmalla</i> (Harmal)	Zygophyllaceae	Whole plant	alkaloides, triterpine, Derivatives of harmalol, peganine	Narcotic analgesic	36
50	<i>Myrtus communis</i> (Vilayati mehndi)	Myrtaceae	Leaves	phytophenols, monoterpenes, alpha-pinene, cineole.	Narcotic analgesic	36
51	<i>Withania somnifera</i> (Ashwagandha)	Solanaceae	Leaves & fruit	Withanolide, steroidal lactones.	Narcotic analgesic	36
52	<i>Sinapis arvensis</i> (Field mustard)	Solanaceae	Aerial	Essential oil, glucosinolates.	Narcotic analgesic	36
53	<i>Asphodeline lutea</i> (Jacob's rod)	Asphodelaccae	Aerial	flavonoids, anthraquinone, naphthalene, sesquiterpene.	Narcotic analgesic	36
54	<i>Murraya paniculata</i> (Orange Jessamine)	Rutaceae	Bark	Coumarins, alkaloids, paniculol, alpha-glycol.	Analgesic	37
55	<i>Tridax procumbens</i> (Tridax daisy)	Compositae	leaves	Saponins, Alkaloids, Flavanoids, Proteins, Phytosterols,	Analgesic	38
56	<i>Hibiscus rosa sinensis</i> (China rose)	Malvaceae	leaves	Flavons, alkaloids, beta-sitosterol, vitamins.	Analgesic	39
57	<i>Pergularia daemia</i> (Utaran)	Asclepiadaceae	Roots	alkaloids, carbohydrates, phytosterols, tannins, flavanoids	Analgesic	40
58	<i>Cissus quadrangularis</i> (Hadjod)	Vitaceae	whole plant	flavonoids, coumarins, steroids	Antiinflammatory, Analgesics	41
59	<i>Bryonia laciniosa</i> . (Gargumar)	Cucurbitaceae	whole plant, fruits	Bryonin.	Analgesic	42
60	<i>Plumbago zeylanica</i> (Chitrak)	Plumbaginaceae	Roots	Flavonoids, beta-sitosterol, plumbagin, plumbagic acid.	Analgesic	43
61	<i>Cissampelos pareira</i> (Akanadi)	Menispermaceae	Aerial parts	Alkaloids, flavon curine, volatile oil, quercitol.	Antiinflammatory, Analgesics	44
62	<i>Clerodendrum phlomidis</i> linn. (Ami)	Verbanaceae	Aerial parts	Phenolic glycosides, saponin.	Analgesic	45
63	<i>Ficus bengalensis</i> (Bar)	Moraceae	Leaves	beta-sitosterol, meso-inositol.	Analgesic	46
64	<i>Manihot esculenta</i> (Simal alu)	Euphorbiaceae	Whole plant	vitamin A, anthocyanins (flavonoids), saponins, steroids	Analgesic	47
65	<i>Thesium chinense</i> (bai rui cao)	Santalaceae	Leaves	Flavanoids, glycosides, essential oils, Alkaloids, Steroids	Antiinflammatory, Analgesics	48
66	<i>Sphaeranthus indicus</i> (Mundi)	Compositae	whole plants	sesquiterpens, sesquiterpene glycoside, steroid. chavicol.	Analgesic	49
67	<i>Rubia cordifolia</i> (Indian Madder)	Rubiaceae	root	Purpurin, xanthin, glycosides, manjisthin, resins	Antiinflammatory, Analgesics	50
68	<i>Solanum trilobatum</i> (Alarka)	Solanaceae	root	Tannins, saponins, flavonoids, cardiac glycosides.	Antiinflammatory, Analgesics	51
69	<i>Calotropis Procera</i> (Rubber bush)	Asclepiadaceae	Latax	alkaloids, tannins	Analgesic	52
70	<i>Mitragyna parvifolia</i> (Kaddam kamgi)	Rubiaceae	Fruits	pyroigneous acid, methyl acetate, ketones and aldehydes	Antiinflammatory, Analgesics	53

Table 1: Plants having Analgesic and Anti-Inflammatory activity (continued..)

S. No	Botanical Name (Common Name)	Family	Part used	Chemical Constituent	Activity	Ref
71	<i>Nothospondias Studtii</i>	Simaroubaceae	leaves	Alkaloids	Antiinflammatory, Analgesics	54
72	<i>Xanthium indicum</i> (Banokra)	Compositae	leaves	Alpha & gamma-tocopherols, polyphenols, glucosides.	Analgesic	55
73	<i>Randia dumetornm</i> (Mainphal)	Rubiaceae	Seeds	pentacyclic triterpene acid glycoside	Antiinflammatory, Analgesics	56
74	<i>Amaranthus Viridis</i> (Green amaranth)	Amaranthaceae	Whole plant	steroids, alkaloids, glycosides, flavanoids, phenolic compounds	Analgesic	57
75	<i>Marsilea trifolia</i> (Goldthread)	Marsilea-ceae	fresh leaf	Betasitosterol, lupeol, stigmasterol, leucoanthocyanins.	Analgesic	58
76	<i>Asystasia dalzelliana</i> (Lavana-valli)	Acanthaceae	Whole plant	Alkaloids, saponins, cardiac glycosides, flavanoids, anthraqui	Antiinflammatory, Analgesics	59
77	<i>Nelumbo nucifera</i> (Kamal)	Nelumbonaceae	seeds	steroids, alkaloids, phenolic and carbohydrates	Analgesic	60
78	<i>Saraca indica</i> (Asok)	Leguminosae	Leaves	sterols, glycosides, saponins, carbohydrates, tannins, alkaloids	Analgesic	61
79	<i>Baliospormum montanum</i> (Danti)	Euphorbiaceae	roots	beta-sitosterol, triterpenoids, flavonoids.	Analgesic	62
80	<i>Kyllinga monocephala</i> (Nirbishi)	Cyperaceae	Leaves	Alkaloids, glycosides, saponins, tannins.	Analgesic	63
81	<i>Mangifera indica</i> (Am)	Anarcardiaceae	Leaves	Flavonoids, polyphenolics, triterpenes, tannins	Antiinflammatory, Analgesics	64
82	<i>Carpolobia lutea</i> (cattle stick)	Polygalaceae	Roots	tannins, saponins, flavonoids, cardiac glycosides, terpenes	Analgesic	65

CONCLUSION

The search for better and safer ways of relieving pain is herbology. It would seem most people agree with the importance of pain relief for these analgesic herbs, some are the best loved and most popular remedies. Some uses for Analgesic herbs are in headaches, toothaches, sore muscles lower back pain and neuralgia. This review opens the way for the research of the active molecules from these plants, their characterisation and isolation.

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