ANTI-INFLAMMATORY ACTIVITY OF THE PLANTS USED IN TRADITIONAL MEDICINES

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ABSTRACT

Herbal medicines have great importance in maintaining the health of the individual. Demand for medicinal plant is increasing in both developed and developing countries due to growing recognition of natural plant being non narcotic, having no side effect, easy availability in surrounding area at desired price. Different parts of the plant have different active substances and these active substances may vary in their extent of activity and concentration. Most of active principles are present in leaves, flower, fruit, bark, root & seeds of the plant. Inflammatory diseases are a major and worldwide problem. Gastrointestinal side effect is the major problem associated with the presently available non-steroidal anti-inflammatory agents. In this review we have described some medicinal plants with respect to their anti- inflammatory action.

KEY WORDS: Ayurveda, Medicinal plants, Herbalism, Anti-inflammatory

INTRODUCTION

Ayurveda the “science of life”, or longevity, is the holistic alternative science from India, and is more than 5,000 years old. It is believed to be the oldest healing science in existence. Ayurveda said to be a world medicine, is the most holistic or comprehensive medical system available. Naturally healthy living is the principle of Ayurveda.[1] People everywhere are realizing the importance of herbs and herbal preparation in their daily life. Herbalism is a traditional medicinal or folk medicine practice based on the use of plants and plant extracts. Many plants synthesize substances that are useful to the maintenance of health in humans and other animals. These include aromatic substances, most of which are phenols or their oxygen- substituted derivatives such as tannins. Many are secondary metabolites, of which at least 12,000 have been isolated — a number estimated to be less than 10% of the total. In many cases, substances like microorganisms, insects, and herbivores. Many of the herbs and spices used by humans to season food yield useful medicinal compounds. The use of herbs to treat disease is almost universal among non-industrialized societies. Many of the pharmaceuticals currently available to physicians have a long history of use as herbal remedies, including opium, aspirin, digitalis, and quinine. The World Health Organization (WHO) estimates that 80 percent of the world's population presently uses herbal

medicine for some aspect of primary health care . Pharmaceuticals are prohibitively expensive for most of the world's population, half of which lives on less than $2 U.S. per day . In comparison, herbal medicines can be grown from seed or gathered from nature for little or no cost. In addition to the use in the developing world, herbal medicine is used in industrialized nations by alternative medicine practitioners such as naturopaths.

Inflammatory diseases including different types of rheumatic diseases are a major cause of morbidity of the working force throughout world. This has been called the King of Human Miseries. Inflammation is a dynamic process that is elicited in response to mechanical injuries, burns, microbial infections and other noxious stimuli that may threaten the well-being of the host. This process involves changes in blood flow, increased vascular permeability, destruction of tissues via the activation and migration of leucocytes with synthesis of reactive oxygen derivatives (oxidative burst) and the synthesis of local inflammatory mediators, such as prostaglandins (PGs), leukotrienes and platelet-activating factors induced by phospholipase A2, cyclooxygenases (COXs) and lipoxygenases . Arachidonic acid is a key biological intermediate that is converted in to a large number of eicosanoids with potent biological activities.

The two major pathways of arachidonic acid metabolism are the COX pathway, which results in the formation of both PGs and thromboxanes and the 5-lipoxygenase pathway, which is responsible for the formation of leukotrienes and 5S-hydroxy-6E, 8Z, 11Z, 14Z- eicosatetraenoic acid (5-HETE).

The use of, and search for, drugs and dietary supplements derived from plants have accelerated in recent years. Pharmacologists, microbiologists, botanists, and natural-products chemists are combing the Earth for phytochemicals and leads that could be developed for treatment of various diseases. Herbal remedies are very common in Europe. In Germany, herbal medications are dispensed by apothecaries (e.g., Apotheke). Prescription drugs are sold alongside essential oils, herbal extracts, or herbal teas. Herbal remedies are seen by some as a treatment to be preferred to pure medical compounds which have been industrially produced. The herbal medicines are getting more importance in the treatment of inflammation because of the toxic effect of the current therapy used to treat those inflammation using synthetic drugs. Finally the phytochemical screening or elucidation of the bioactive compounds from the plant would be effective drug against inflammation Nature has provided a complete store-house of remedies to cure all aliments of mankind .This is where, nature provides us drugs in the form of herbs, plants and algae's to cure the incurable diseases without any toxic affections. Medicinal plants are believed to be an important source of new chemical substances with potential therapeutic effects.[2] The research into plants with alleged folkloric use as pain relievers, anti-inflammatory agents, should therefore be viewed as a fruitful and logical research strategy in the search for new analgesic and anti-inflammatory drugs. Because existing synthetic molecules like nonsteroidal anti-inflammatory drugs (NSAIDs) and selective COX-2 inhibitors that increase the incidence of adverse cardiovascular

thrombotic effects. So, in order to overcome, there is need to focus on the scientific exploration of herbal drugs having fewer side effects.

CONCLUSION

It can be concluded that studies with new anti-inflammatory plants are important for the discovery of drug with less side effects, less costly, affordable and more effective in the treatment of inflammation. This type of study with medicinal plants will contribute to the benefit of the populations needing this type of health care.

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TABLE 1: Plants having Anti-Inflammatory activity

S.No	Plant Name	Part used	Anti-inflammatory and other beneficial effects	References
1.	*Conyza floribunda (Asteraceae)*	Whole plant	Antiviral	**3**
2.	*Eupatorium articulatum (Asteraceae)*	Whole plant	Antioxidant	**3**
3.	*Bonafousia longituba (Apocynaceae)*	Whole plant	Antioxidant	**3**
4.	*Bonafousia sananho (Apocynaceae)*	Whole plant	Antinociceptive	**3**
5.	*Tagetes pusilla (Asteraceae)*	Leaves	Anti-infectious, anti-microbial, antibiotic, anti-spasmodic, anti-parasitic	**3**
6.	*Piper lenticellosum (Piperaceae)*	Leaves and spikes	Anti-secretory, and anti-Helicobacter pylori	**3**
7.	*Microtrichia Perotiti (Compositae)*	Leaves	Analgesic	**4**
8.	*Hypericum triquetrifolium (Hypericaceae)*	Leaves	Antinociceptive and antioxidant	**5**
9.	*Hedera helix (Araliaceae)*	Leaf	Asthma and chronic obstructive pulmonary disease	**6**
10.	*Rumex patientia l (Polygonaceae)*	Roots and leaves	Poultice, skin problems and constipation	**7**
11.	*Blechnum occidentale (Blechnaceae)*	Leaves	Antinociceptive	**8**

12.	*Moringa oleifera (Moringaceae)*	Leaves	Water purifier and antioxidant	**9**
13.	*Proustia pyrifolia (Asteraceae)*	Aerial parts	Analgesic	**10**
14.	*Bambusa arundinacea (Poaceae)*	Leaves	Antiulcer	**11**
15.	*Tephrosia purpurea (Fabaceae)*	Whole plant and roots	Anti-dermatoses, antibiotic and healing of the wounds and ulcers	**12**
16.	*Anthurium cerrocampanense (Araceae)*	Whole plant	Ornamental	**13**
17.	*Litchi chinensis (Sapindaceae)*	Fruits	Gastralgia, tumors and enlargements of the glands.	**14**
18.	*Artemisia copa phil.(Compositae)*	Aerial parts	Antinociceptive	**15**
19.	*Byrsocarpus coccineus (Connaraceae)*	Leaves	Anxiolytics and sedative	**16**
20.	*Psoralea glandulosa l (Papilionaceae)*	Leaves and roots	Antioxidant	**17**
21.	*Ageratum conyzoides (Asteraceae)*	Leaves	Pneumonia ,wounds and burns and insect repellent	**18**
22.	*Polygala japonica (Polygalaceae)*	Flowering tops	Snake bite	**19**
23.	*Erigeron floribundus (Asteraceae)*	Leaves and stem	Antifungal	**20**
24.	*Carthamus lanatus (Asteraceae)*	Aerial parts	Analgesic	**21**
25.	*.Adiantum latifolium lam (pteridaceae)*	Leaves	Anxiolytic and analgesic	**22**
26.	*Zizyphus lotus (Rhamnaceae)*	Root, leaf and stem	Antioxidant	**23**
27.	*Alstonia boonei (Apocynaceae)*	Bark	Antipyretic and analgesic	**24**
28.	*Quercus infectoria (Fagaceae)*	Young branches	Antibacterial	**25**
29.	*Centaurea chilensis (Asteraceae)*	Aerial parts	Antinociceptive	**26**
30.	*Alstonia boonei (Apocynaceae)*	Bark	Antipyretic and analgesic	**27**
31.	*Rauvolfia vomitoria (Apocynaceae)*	Roots	Blood pressure, mental illness, aphrodisiac, sedative and antspasmodic	**27**
32.	*Elaeis guineensis (Arecaceae)*	Roots, seeds and fruits	Elephantiasis, leprosy and mild anaesthetic	**27**
33.	*Stachytarpheta cayennensis (Verbenaceae)*	Leaves	Gastric and liver problems and asthma	**28**

34.	*Terminalia catappa (Combretaceae)*	Leaves, bark and fruits	Dysentery, cough, leprosy, headache and travel nausea	**29**
35.	*Turnera ulmifolia (Passifolaraceae)*	Whole plant	Antioxidant and aphrodisiac	**30**
36.	*Acanthus montanus (Acanthaceae)*	Shoots, roots, leaves, stem and bark	Cardiovascular, infectious and respiratory diseases	**31**
37.	*Cucurbita andreana (Cucurbitaceae)*	Seeds	Antinociceptive	**32**
38.	*Arecastrum romanzoffianum (Arecaceae)*	Fruits	Antinociceptive	**33**
39.	*Comarum palustre (Rosaceae)*	Roots	Stomach ulcers	**34**
40.	*Sambucus ebulus (Adoxaceae)*	Whole plant	Anti H.pylori, cytotoxic and anti-angiogenic	**35**
41.	*Salvia triloba (Lamiaceae)*	Leaves	Fumigate sweat hut and wound healing power	**36**
42.	*Solanum trilobatum (Solanaceae)*	Leaves and seeds	Stimulant and tonic	**37**
43.	*Torreya grandis (Cephalotaxaceae)*	Seeds	Antinociceptive	**38**
44.	*Foeniculum vulgare (Apiaceae)*	Fruits and stem	Carminative, purgative, glaucoma, diuretic and hyprtension	**39**
45.	*Dodonaea viscose (Sapindaceae)*	Leaves	Antifungal	**40**
46.	*Myracrodruon urundeuva (Anacardiaceae)*	Stem-bark	Antiulcer	**41**
47.	*Hedera colchica (Araliaceae)*	Whole plant	Gout, pain and cough	**42**
48.	*Carica papaya (Caricaceae)*	Fruit	Digestive problems and intestinal worms	**43**
49.	*Pluchea indica (Asteraceae)*	Roots	Dysentery, myosis, small pox, astringent and diaphoretic	**44**
50.	*Calotropis procera (Apocynaceae)*	Roots	Antioxidant	**45**
51.	*Aloe vera (Asphodalaceae)*	Whole plant	Skin,wounds,burn,blisters,healing purpose,acne	**46**
52.	*Euphorbia prostrate (Euphorbiaceae)*	Whole plant	Bleeding hemorrhoids treatment	**47**
53.	*Phyllanthus amarus (Phyllanthaceae)*	Leaves	Antiallodynic	**48**
54.	*Dysoxylum binectariferum (Meliaceae)*	Bark	Pesticidal	**49**
55.	*Cordia myxa (Boraginaceae)*	Fruit	For good growth of hair	**50**
56.	*Acanthopanax chiisanensis (Araliaceae)*	Leaves	Antioestogenic	**51**

57.	*Origanum ehrenbergii (Lamiaceae)*	Leaves	Antioxdent and anticholinestrase	**52**
58.	*Cordia verbenacea (Boraginaceae)*	Leaves	Back pain relief	**53**
59.	*Berberis vulgaris (Berberidaceae)*	Roots	Gastrointestinal pain , skin disease	**54**
60.	*Auxemma oncocalyx (Boraginaceae)*	Heart-wood	Antinociceptive and antiedematogenic	**55**
61.	*Croton macrostachys (Euphorbiaceae)*	Seeds	Purgative	**56**
62.	*Strychnos henningsii (Loganiaceae)*	Leaves	rheumatism, gastrointestinal complaints and snake bites	**57**
63.	*Withania somnifera (Solanaceae)*	Leaves	Adaptogenic	**58**
64.	*Anacardium occidentale (Anacardiaceae)*	Bark	Warts, ulcers and elephantiasis	**59**
65.	*Calotropis procer (Asclepiadaceae)*	Latex	Antioxidant and antibacterial	**60**
66.	*Eupatorium arnottianum (Asteraceae)*	Leaves	Antifungal, antimicrobial	**61**
67.	*Zhumeria majdae (Labiatae)*	Aerial parts	Antinociceptive	**62**
68.	*Bacopa monniera (Scrophulariaceae)*	Whole plant	Memory enhancing, anti-inflammatory, analgesic, antipyretic, sedative and antiepileptic agent	**63**
69.	*Zingiber officinale (Zingiberaceae)*	Rhizome	Stomach disorder, cold, dyspepsia, fever, pain and menstrual disorder	**64**
70.	*Morus alba (Moraceae)*	Leaves	Cytotoxic	**65**
71.	*Barleria prionitis (Acanthaceae)*	Whole plant	Antiarthritic	**66**
72.	*Hippocratea excelsa (Hippocratiaceae)*	Whole plant	Antiarthritic	**67**
73.	*Nyctanthes arbor tristis (Oleaceae)*	Leaves	Sciatica and arthritis	**68**
74.	*Achyrocline satureioides (Asteraceae)*	inflorescences	Analgesic, antispasmodic, constipating and sedative activities	**69**
75.	*Paederia foetida (Rubiaceae)*	Leaves	Antirheumatic	**70**
76.	*Pistacia integerrima galls (Anacardiaceae)*	Whole plant	Chest diseases as well as for aches and pains in the body	**71**
77.	*Eugenia uniflora (Myrtaceae)*	Leaves	Febrifuge and astringent and for stomach problems	**72**
78.	*Sideritis canariensis var (Lamiaceae)*	Leaves	Analgesic	**73**

79.	*Arnebia euchroma (Boraginaceae)*	Roots	Antibacterial, antipyretic, cancer, contraceptive and emollient	**74**
80.	*Euphorbia Lactea (Euphorbiaceae)*	Latex	Warts and tumour	**75**