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Does Combination of Herbal Plants As A Treatment in Inflammation Show Synergistic Effect? My Point of View

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ABSTRACT
Inflammatory substances in the blood protect body from outside invaders such as bacteria and viruses.However, an uncontrolled inflammatory response is the primary cause of a wide range of disorders, including allergies, cardiovascular dysfunctions, metabolic syndrome, cancer, and autoimmune diseases, all of which place a significant economic burden on individuals and society.Nonsteroidal anti-inflammatory medications (NSAIDs) are routinely used to treat pain and inflammation. However, due to the negative effects of several NSAIDs, such as gastrointestinal bleeding and immune system suppression, focus has switched to alternate pharmacotherapies. Herbal plants have long been recognized as valuable sources of medicinally active chemicals. Now a days Harbal medicines are used in a huge amount as anti inflammatory drugs.In this review we mentioned some herbal plants which have anti-inflammatory activities. Here we listed some herbal plants likeCassia fistula, Caralluma thberculata, Kiekia acuminata, Citrus auranticum and their different parts like leaves, roots, fruits etc. which shows inflammation. This review also gives a brief information about how different different combination of herbal drugs as a treatment in inflammation shows synergistic affectswhich has high potency and low side effect.

KEY WORDS :- Herbal Plant, Inflammation, Medicinal Plant, Anti-inflammatory Activity.

I. INTRODUCTION

Inflammation is the body's extreme response to any form of injury. Pain, redness, heat or warmth, and swelling are the four major symptoms of inflammation. The arterioles in the surrounding tissue dilate when a part of the human body is injured[1]. This results in increased blood flow to the affected area (redness).There are three types of inflammation which are commonly seen: acute, delayed and chronic inflammation. Acute inflammation may be the body's first response to damaging stimuli. The inflammatory response is out of proportion in chronic inflammation, resulting in body harm[2]. Inflammation is our body's defenses response to potentially harmful stimuli such as allergens and/or tissue injury; however, an uncontrolled inflammatory response is the primary cause of a wide range of disorders, including allergies, cardiovascular dysfunctions, metabolic syndrome, cancer, and autoimmune diseases, all of which place a significant economic burden on individuals and society. There are a variety of pharmaceuticals for regulating and suppressing inflammatory crises; steroids, nonsteroid anti-inflammatory agents, and immunosuppressants are examples of these therapies with side effects. In practice, our goal is to use the smallest effective dose with the highest efficacy and the fewest side effects[3]. As a result, we must incorporate natural anti-inflammatory components into drug therapy in order to get improved pharmacological response and outcomes. Herbal remedies are advancing topics in medicine, and we must, of course, learn more about them[9]. Herbal prescription recommendations comes mostly from complementary, alternative, and traditional medicine, however contemporary medicine must confirm these principles through scientific means before employing them in practice[4,6].

Plants have long been recognized as valuable sources of medicinally active chemicals. Plant-derived chemicals have been shown to have medicinal and pharmacological effects, and there is growing interest in the identification and characterization of bioactive molecules from natural sources[5].

Nonsteroidal anti-inflammatory medications (NSAIDs) are routinely used to treat pain and inflammation in illnesses like rheumatoid arthritis, osteoporosis, and Alzheimer's disease. However, due to the negative effects of several NSAIDs, such as gastrointestinal bleeding and immune system suppression, focus has switched to

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alternate pharmacotherapies. Recent research suggests that Zingiber officinale, or ginger, may be as beneficial as some NSAIDs in the treatment of inflammation and pain[7].

II. HERBAL PLANTS WITH ANTI-INFLAMMATORY ACTIVITIES:-

Herbal remedies work in a method that relies on an orchestral approach, unlike modern allopathic pharmaceuticals, which have single active components that target one specific pathway. A plant contains a variety of chemicals that work together to target certain aspects of the complex biological system[11,62]. For millennia, medicinal plants have been a source of a wide range of biologically active substances, which have been employed widely as crude material or as purified compounds to treat a variety of diseases. Because of the toxicity and side effects of allopathic drugs, herbal therapy is becoming more popular[13]. The creation of effective therapeutic medicines relies heavily on medicinal plants. Over 1.5 million people practice traditional medicine, which uses medicinal herbs for preventative, promotional, and curative purposes[10]. India, having the world's largest repository of medicinal plants, may continue to play a key role in producing raw materials, either directly for crude medications or as bioactive chemicals in pharmaceutical and cosmetic formulations[5]. Some of the herbal plants shows anti-inflammatory effects are-

2.1.Justicia adhatoda

Adhatoda vasica (Acanthaceae family) is a shrub utilised by Asian and European physicians. The plant has been utilized in Indian traditional medicine for centuries. Cough, colds, asthma, liquefy sputum, bronchodilator, bronchial catarrh, bronchitis, and tuberculosis have all been treated using the leaves, roots, flowers, and bark of this plant[9,21]. The plant's components are often consumed in decoction or powder form. The leaves are also used as juice. In the isolated guinea pig tracheal chain, an essential oil from the leaves has an airway smooth muscle relaxant effect. In the guinea pig, a methanolic extract from the entire plant had antiallergic and antiasthmatic properties. Vasicine, an alkaloid, is one of the plant's most important components, responsible for the majority of its antioxidant, anti-inflammatory, and bronchodilatory properties[15].

FIG 1 :JUSTICIA ADHATODA

2.2.Calendula officinalis L.

The marigold, Calendula officinalis L., is a member of the Asteraceae/Compositae family endemic to Central Europe and the Mediterranean[7,10]. Its flower oil is the most common ingredient in cosmetics, and it contains a variety of bioactive compounds such as terpenoids and terpenes (primarily bisabolol, faradiol, chamazulene, arnidiol, and esters), carotenoids (primarily rubixanthin and lycopene structures), flavonoids (primarily quercetin, isorhamnetin, and kaempferol aglycones) (mainly calendic acid).[8,10]

Since the sixteenth century, Calendula officinalis L. has been used for medicinal purposes. The plant has been reported to have angiogenic, vascular regeneration, analgesic, antibacterial, and antioxidant properties[6,7,10].

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FIG 2: CALENDULA OFFICINALIS L.

2.3.Moringa oleifera

Moringa oleifera, sometimes known as drumstick, is a drought-resistant tree in the Moringaceae family. It is endemic to tropical South Asian locations, and India is the world's largest producer of drumsticks, with annual production ranging from 1-1.3 million tonnes. According to the World Centre of Vegetable Research, it is also grown in other Asian nations such as the Philippines, Sri Lanka, Malaysia, Indonesia, and Taiwan[21,23].

Drumsticks are high in vitamin C and antioxidants, which assist to fight the common cold, flu, and a variety of other diseases[20]. Drumstick's anti-inflammatory and antibacterial characteristics aid in the relief of asthma, cough, wheezing, and other respiratory disorders. To boost the immune system and keep diseases at bay, eat drumstick soup for speedy treatment from common coughs and other illnesses.[8,10,21]

FIG 3:MORINGA OLEIFERA

2.4.Nyctanthes arbor-tristis

Nyctanthes arbor-tristis, often known as Night-flowering jasmine or Parijat, is a Nyctanthes species found in South and Southeast Asia. Parijat is a well-known antipyretic. It treats a variety of unpleasant fevers, including malaria, dengue, and chikungunya[11]. The anti-inflammatory characteristics of parijat leaves and flowers, as well as certain essential oils, make them useful in the treatment of arthritic knee pain[17]. Cough, cold, and bronchitis are treated using a tea made from Parijat leaves and flowers. The ethanol extract of the Parijat plant has been shown to be an effective bronchodilator in studies. It's also fantastic for asthma. Parijat oil has anti-allergic, antiviral, and antibacterial properties[15]. It aids in the prevention of germs such as E. coli, staph infection, and some fungal infections. It can also be used to treat a variety of cutaneous fungal infections. Due to its immunostimulatory properties, parijat flowers and leaves help to enhance immunity[12].

International Journal of Pharmaceutical Research and Applications
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FIG 4:NYCTANTHES ARBOR-TRISTIS

2.5.Aloe vera

Aloe Vera has been shown in trials to aid with a variety of inflammatory diseases when used topically and orally. Gastric ulcers and inflammation are reduced with aloe vera. Aloe vera is well-known for its ability to speed wound healing[9,16,44,52]. Its anti-inflammatory properties aid in the speedier healing of wounds. Insulin resistance develops in obese persons as a result of inflammation generated by cytokines and tumour necrosis factors in fat tissues[6,16,52]. Because of its powerful anti-inflammatory capabilities, aloe vera has been demonstrated to reduce obesity-induced inflammation. Aloe Vera is a natural pain reliever that may be used instead of pain relievers that have negative side effects[20]**.** It has been determined that it is safe to use. Aloe vera's anti-inflammatory properties reduce pain by inhibiting severe inflammation.[16,17,44]

FIG 5:ALOE VERA

2.6.Zingiber officinale

Gingerol has powerful anti-inflammatory and antioxidant effects, according to research. For instance, it may help reduce oxidative stress, which is the result of having an excess number of free radicals in the body[26,32]. Ginger appears to be highly effective against nausea. It may help relieve nausea and vomiting for people undergoing certain types of surgery. Ginger may also help chemotherapy-related nausea, but larger human studies are needed[14,61]. However, it may be the most effective when it comes to pregnancy-related nausea, such as morning sickness. Oxidative stress and chronic inflammation can accelerate the aging process[21]. They're believed to be among the key drivers of Alzheimer's disease and age-related cognitive decline.Some animal studies suggest that the antioxidants and bioactive compounds in ginger can inhibit inflammatory responses that occur in the brain. Gingerol can also help lower the risk of infections[20]

International Journal of Pharmaceutical Research and Applications
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FIG 6: ZINGIBER OFFICINALE

2.7.Swertia Chirata

Chirata has been seen to reduce fever caused due to cold and flu very efficiently. It also works on malarial fever, hysteria and convulsions[27]. Chirata helps to eliminate parasites like helminthes, roundworms, tapeworms and flukes from the body[21]. Their antioxidant property helps clear the skin. It comes handy in treating various skin conditions such as rashes, inflammation, itching, burning sensation and redness.It also helps to reduce exesive inflammation of the joints of our body.[27]

FIG 7:SWERTIA CHIRATA

Besides them there are so many herbal plants that show anti-inflammatory activities like Turmeric, Garlic, Cardamom, Black pepper, Ginseng, Green tea, Rosemary, Cinnamon etc. Below (Fig 8) we can see some herbal plants with anti inflammatory activities:

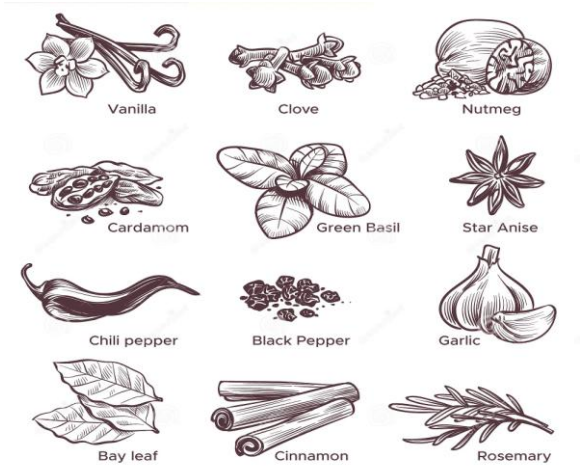

FIG 8 : HEBAL DRUGS

International Journal of Pharmaceutical Research and Applications
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FIG 9 : SOME HERBAL PLANTS WITH ANTI-INFLAMMATORY ACTIVITIES

S.No	Plant Name	Family	Plant Part
1	*Achillea millefolium*	Asteraceae	Whole Plant
2	*Aconitum heterophyllum*	Valeraneaceae	Root
3	*Adhatoda vasica Nees*	Acanthaceae	Leaves
4	*Adansonia digitata*	Malvaceae	Fruit
5	*Aegle marmelos*	Rutacae	Leaves
6	*Aloe vera*	Asphodelaceae	Leaves
7	*Azardirachta indica*	Meliaceae	Leaves
8	*Annona squamosa*	Annonaceae	Seeds
9	*Baccharis incarum*	Astereae	Whole plant
10	*Bacopa Monnieri*	Scrophulariaceae	Whole Plant
11	*Barleria prionitis*	Acanthaceae	Whole plant
12	*Bonafousia sananho*	Apocyanaceae	Whole plant
16 13	*Boussingaultia gracilis*	Bassellaceae	Leaves, Stem and Bark
14	*Boswellia serrata*	Burseraceae	Resin
15	*Bryophyllum pinnatum*	Crassulaceae	Leaves
16	*Bursera simaruba*	Burseraceae	Leaves, Bark
17	*Caralluma thberculata*	Asclepiadaceae	Whole plant
18	*Cassia fistula*	Caesalpiniaceae	Leaves
19	*Cassia obtusifolia*	Leguminosae	Leaves
20	*Citrus auranticum*	Rutaceae	Fruit
21	*Commiphora mukul*	Burseraceae	Resin
22	*Cordia ulmifolia*	Boraginaceae	Leaves
23	*Curcuma longa*	Zingiberaceae	Rhizomes
24	*Daphne pontica*	Thymelaeaceae	Aerial Parts, Roots
25	*Elephantophs scaber*	Compositae	Leaves
26	*Emblica officinalis*	Euphorbiaceae	Fruit
27	*Erythrospermum monticoloum*	Flacourtiaceae	Leaves
28	*Garcinia mangostana*	Guttiferae	Fruit
29	*Hammada elegans*	Chenopodiaceae	Aerial part
30	*Hedera rhombea*	Araliaceae	Leaves
31	*Iberis amara*	Brassicaceae	Whole plant
32	*Kirkia acuminata*	Simaroubaceae	Leaves
33	*Lantana camera*	Verbenaceae	Leaves

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 2 Mar-Apr 2022, pp: 691-707www.ijprajournal.com ISSN: 2456-4494

34	*Lippia geminata*	Verbenaceae	Leaves
35	*Lippia nodiflora*	Verbenaceae	Leaves
36	*Lycopodium clavatum*	Lycopodiaceae	Aerial Parts
37	*Mangifera indica*	Anacardiaceae	Bark
38	*Marsdenia condurango*	Asclepiadaceae	Whole plant
39	*Mikania cordata*	Compositae	Root
40	*Moringa olifera*	Moringaceae	Root, Flowers,
41	*Paederia foetida*	Rubiaceae	Leaves
42	*Palisota hirsuta*	Commelineceae	Leaves
43	*Petiveria alliaceae*	Phytolaccaceae	Root
44	*Phyllanthus polyphyllus*	Euphorbiaceae	Whole plant
45	*Piper longum*	Piperaceae	Roots
46	*Piper ovatum*	Piperaceae	Leaves
47	*Pluchea indica*	Asteraceae	Root
48	*Ricinus communis*	Euphorbiaceae	Roots, leaves
49	*Rheum australe*	Polygonaceae	Root
50	*Rubrus ellipticus*	Rubiaceae	Leaves
51	*Saussurea costus*	Asteraceae	Whole Plant
52	*Sesbania sesban*	Leguminosae	Leaves and Bark
53	*Sida cordifolia*	Malvaceae	Whole Plant
54	*Sidium guajava*	Myrtaceae	Fruit
55	*Swertia chirata*	Gnetaceae	Aerial part
56	*T. buxifolium*	Rosaceae	Leaves, Stem
57	*T. flavum*	Ranunculaceae	Leaves, Stem
58	*T. micrantha*	Myrtaceae	Leaves
59	*Tinospora diversifolia*	Menispermeaceae	Aerial part
60	*Tuberaria lignosa*	Cistaceae	Leaves
61	*Thespesia populnea*	Malvaceae	Leaves and Barks
62	*Vinca rosea*	Apocynaceae	Leaves
63	*Visnea mocanera*	Theaceae	Leaves
64	*Vitex negundo*	Lamiaceae	Leaves
65	*Xeromphis spina*	Compositae	Pulp
66	*Zanha africana*	Sapindaceae	Root bark
67	*Zingiber officinalae*	Zingiberaceae	Rhizome

FIG 10 : SOME HERBAL PLANTS WITH ANTI INFLAMMATORY ACTIVITIES

III. COMBINATION OF HERBAL DRUGS WITH ANTI-INFLAMMATORY ACTIVITY-

Now-a-days combination of herbal drugs are being used for the treatment of inflammation. The anti inflammatory activity of the combined herbal extracts have good potency comparable to standard drug. Many research proved the efficacy of combined herbal drugs on inflammation. Although there are many combination of herbal drugs that has not been discovered. Some of the combination of herbal drugs which had discovered is mentioned below-

3.1.Combination Of Aloe Vera, Bacopa Monnieri, Moringa Oleifera And Rhizome Of Zingiber Officinale-

Aloe barbadensis miller is the botanical name for Aloe vera. It inhibits the cyclooxygenase pathway, lowering the generation of prostaglandin E2 from arachidonic acid. C-glucosyl chromone, a new antiinflammatory molecule, was recently isolated from gel extracts[41,57].

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 2 Mar-Apr 2022, pp: 691-707www.ijprajournal.com ISSN: 2456-4494

Bacopa monnieri L. (Family Scrophulariaceae) is a creeping, glabrous, succulent plant that roots at nodes and is found across India in all plain districts. Sedative, antiepileptic, vasoconstrictor, and anti-inflammatory properties have been documented for the herb[59].

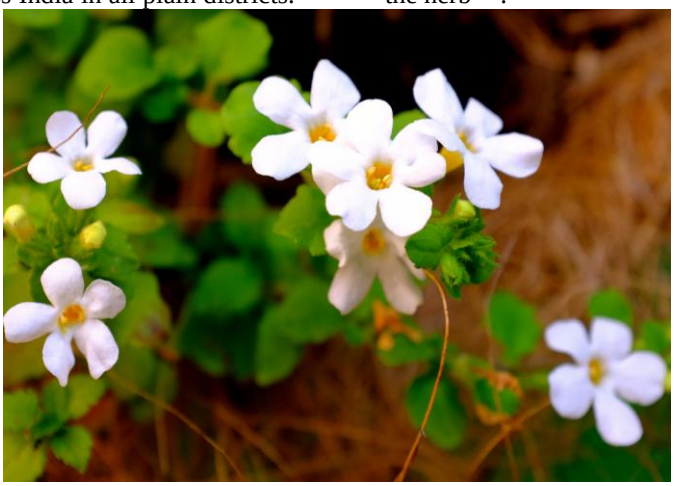

FIG 11: BACOPA MONNIERI L. (FAMILY SCROPHULARIACEAE)

The drumstick tree, Moringa oleifera Lam., is the most extensively cultivated species of the Moringaceae monogeneric family[21,33]. Humans have traditionally consumed all portions of the Moringa tree because they are edible. Moringa has antitumor, antipyretic, antiepileptic, anti-ulcer, anti-spasmodic, diuretic, anti-hypertensive, antioxidant, anti-diabetic, anti-inflammatory, cholesterol-lowering properties in various portions of the plant.[33]

The ginger plant, Zingiber officinale R. (Zingiberaceae), is grown commercially in India, China, Southeast Asia, the West Indies, Mexico, and other regions of the world. It's used as a spice and flavouring ingredient all over the world, and it's said to have a variety of medical benefits[20]. It acts as a carminative, anti-emetic, spasmolytic, peripheral circulatory stimulant, and anti-inflammatory, according to the British Herbal Compendium[14].

Herbal Preparation of these four herbal plants shows effective RBC membrane stabilization and inhibition of protein denaturation both contributing to it's in –vitro anti-inflammatory activity[60].

3.2.Combination of Commiphoramyrrha And Boswellia carterii-

Commiphora myrrha (Nees) Engl. (Burseraceae) and other species of Commiphora are used to make myrrh, a traditional Chinese herbal medicine[46]. In India, China, Rome, and Greece, it was commonly used in clinics to treat fever, stomach complaints, gall bladder illnesses, skin infections, amenorrhea, pain, dysmenorrhea, tumours, chest problems, and snake stings. In addition, pharmacological research have revealed that myrrh has anti-inflammatory, cytotoxic, anaesthetic, and antibacterial properties[58].

FIG 12: COMMIPHORA MYRRHAFIG 13: BOSWELLIA CARTERII

Ruxiang (Frankincense) is a dried gum resin from Boswellia carterii, one of 43 species in the Boswellia genus of the Burseraceae family[35]. For thousands of years, it has been used to relieve

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 2 Mar-Apr 2022, pp: 691-707www.ijprajournal.com ISSN: 2456-4494

pain and inflammation, as well as to stimulate blood circulation in China and as an antiarthritic in Ayuredic medicine in India[54].
Pharmacological studies of these combined drugs have proven that the combination of Commiphora myrrha and Boswellia carterii are effective for inflammation[60].

3.3.Combination of Larrea divaricata Cav., Larrea cunefolia Cav, Larrea nitida Cav., Zuccagnia punctata Cav and Tetraglochin andina Ciald-

Medicinal plants such as Larrea divaricata Cav., Larrea cunefolia Cav., Larrea nitida Cav., Zuccagnia punctata Cav.and Tetraglochin andina Ciald. grow in Argentina's dry and semiarid areas[43]. These species are used to treat dandruff, lice, parasites, mycosis, vaginal infections, gastrointestinal, respiratory, and inflammatory illnesses, colds, rheumatic pain, diabetes, and hypocholesterolemia, either alone or in combination[43,51].

FIG 12: LARREA DIVARICATA

FIG 13: ZUCCAGNIA PUNCTATA

The most active plant extract mixes were Z. punctata/L. nitida, Z. punctata/L. divaricata, and Z. punctata/L. cuneifolia, which showed synergistic antifungal effects against Candida albicans and non-albicans, as well as Saccharomyces cerevisiae strains. Furthermore, both extracts and mixes have antioxidant activity and were able to block LOX, a pro-inflammatory enzyme, at low doses[51].

3.4.Combination of Scutellaria baicalensis and Eleutherococcus senticosus -

S. baicalensis can significantly suppress the release of histamine and PGD2 upon anti-IgE stimulation of mucosal tissue and the combination of S. baicalensis with E. senticosus and vitamin C increases the suppressive efficacy of PGD2 and histamine[57]. This combination can lower the concentrations and nearly completely suppress both PGD2 and histamine and act as an anti inflammatory[61]. The combination of Scutellaria baicalensis and Eleutherococcus senticosus are used in the treatment of COPD or Chronic Obstractive Pulmonary Diseases.

FIG 14: SCUTELLARIA BAICALENSIS

FIG 15: ELEUTHEROCOCCUS SENTICOSUS

3.5.Combination of Rosa canina, Tanacetum vulgare, Urtica dioica

Combination of Rosa canina, Tanacetum vulgare, and Urtica dioica is also known as Setarud, a trademarked multi-herbal compound. Setarud has been shown to have anti-inflammatory and anti-oxidative stress effects in human investigations[52]. The antioxidant and anti-

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 2 Mar-Apr 2022, pp: 691-707www.ijprajournal.com ISSN: 2456-4494

inflammatory characteristics of IMOD or Setarud were discovered to be important in the regulation of animal models of colitis, diabetes, hyperchlosteromia, polycyctic ovarian syndrome, and liver damage[58].

Results	Type of administration	Dose and duration of study	Type of study	Disease	Study
TNF-α ~	Oral	400 mg/days for 90 days	Before-after clinical trial (30 patients)	Oral lichen Planus	Agha-Hosseini *et al.* (2011)
APACHE score↓, SAPS↓, SOFA↓, IL-1~, IL-2~, IL-6~, PAI-1~, TNF-α↓ TTM↑, NO~, TAP~, LPO~	IV infusion	Loading dose: 125 mg Maintenance dose: 62.5 mg/day for 14 consecutive days	Clinical trial (20 patients)	Severe sepsis	Mahmoodpoor *et al.* (2010)
CD4 count~	IV infusion	2, 4, 6.7, 10 ml/day for 28 days	Phase I clinical trial (12 patients)	HIV infection	Khairandish *et al.* (2009)
CD4 count↑	IV infusion	4 ml day^{-1} for 90 days	HIV patients	HIV infection	Mohraz *et al.* (2009)

Fig 16 : Setarud with promising health benefits

3.6.Combination of Setarud, Cercumin and Quercetin

Setarud is a patented multi-herbal compound containing selenium and urea and treated with a pulsed high frequency electromagnetic field. It is made up of Rosa canina, Tanacetum vulgare, and Urtica dioica. Setarud has anti-inflammatory and anti-oxidative stress effects in human investigations[58].

Curcumin, also known as diferuloylmethane, is the active element in the nutritional spice turmeric, which comes from the plant Curcuma longa, which has a long history of usage in Chinese and Indian traditional medicine[40]. Curcumin was initially identified for its antibacterial properties, but it was subsequently revealed to have hypolipidaemic, antidiabetic, anti-inflammatory, antioxidant, and anticancer properties[48,51].

Quercetin is a polyphenol that is classed as a bioflavonoid and is found in a wide range of plants, fruits, and vegetables[59].

It is proven that the combination of Setarud, Cercumin and Quercetin has anti-inflammatory activities in human body[61].

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 2 Mar-Apr 2022, pp: 691-707www.ijprajournal.com ISSN: 2456-4494

Quercetin	Setarud	Curcumin
Anti-free radical (6)	Anti-free radical (14)	Anti-free radical (16)
Inhibition of bio-molecules oxidation (49)	Anti-lipid peroxidation (14)	Antiangiogenic (16,42)
Falling FBS and BS2hpp (20-23,51)	Antidiabetic (13,14)	Antidiabetic (16)
Increasing insulin secretion (20-23,50)	Increasing insulin secretion (14)	Antipsychotic disorders (16,40,41)
Iron chelation (52,53)	----------	Iron chelation (16,52)
Preservation of NO (17,24,25,52)	----------	Preservation of NO (16,39,52)
Anti-cancer (18,19,24,25,52)	----------	Anti-cancer (16,40,41,52)
Anti-inflammation (6,24-26,52)	Anti-inflammation (14,16,27-29,31-36)	Anti-inflammation (39-41,52)
Inhibition of NF-κB (24,25,52,53)	Inhibition of NF-κB (6)	Inhibition of NF-κB (16,52)
Coping against β-cell damage (17,24,25,52)	Coping against β-cell damage (14)	Improvement of diabetic retinopathy (16,42)
Renal protection (17,24,25,52)	----------	Renal protection (16,42,52)
Cardioprotection (18,19)	---------	Cardioprotection (16,40,41)
Hepatoprotection (17,24,25,52)	--------	Help to wound healing (16,40,41)

Fig 17:Activities of Quercetin, Setarud and Curcumin

3.7.Combination of Lonicera japonica and Fructus Forsythiae

Combination of the herbs Lonicera japonica and Fructus Forsythiae have synergistic anti-influenza and anti-inflammatory properties[61].

FIG 18 : LONICERA JAPONICA

FIG 19 : FRUCTUS FORSYTHIAE

3.8.Combination of Phellodendron amurense and Coptis chinensis-

Combination of Phellodendron amurense and Coptis chinensis has shown anti- inflammatory activities in animal models in clinical trials.

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 2 Mar-Apr 2022, pp: 691-707www.ijprajournal.com ISSN: 2456-4494

FIG 20 : PHELLODENDRON AMURENSE

FIG 21 : COPTIS CHINENSIS

3.9.Combination of Phyllanthus emblica, Tinospora cordifolia and Piper nigrum

P.emblica (syn. Emblica officinalis), often known as Indian gooseberry (family: Euphorbiaceae), is an essential medicinal plant in Indian medicine's traditional system. Because of the presence of bioactive phytochemicals such as polyphenols, tannins, flavonoids, glycosides, and proanthocyanidins, the fruit of Amla, which is high in ascorbic acid, has immunomodulatory qualities that help lymphocytes grow[62].

Guduchi is the common name for T. cordifolia (family: Menispermaceae) Glycosides, phenolics, alkaloids, diterpenoid, lactones, steroids, sesquiterpenoid, polysaccharides, and aliphatic compounds derived from T.cordifolia are responsible for its pharmacological activities such as anti-oxidant, anti-inflammatory, anti-spasmodic, anti-arthritic, anti-allergic, and anti-diabetic properties[51,62].

P. nigrum (family: Piperaceae), sometimes known as black pepper, has been used for centuries for its anti-hypertensive, anti-oxidant, anti-platelet, immunomodulatory, anti-tumor, anti-spasmodic, analgesic, anti-inflammatory, anti-depressant, anti-fungal, anti-bacterial, and hepatoprotective properties[62].

Combination of these three herbal plants show anti inflammatory affect in clinical studies.

FIG 22:PHYLLANTHUS EMBLICAFIG23: PIPER NIGRUMFIG 24 :TINOSPORA CORDIFOLIA

IV. DISCUSSION

Inflammation is a natural immunological reaction; but, if the body's inflammation control is defective, it will have a negative impact on the body. Now a days Harbal medicines are used in a huge amount as anti inflammatory drugs. Herbal remedies are the result of hundreds of years of restorative experiences and practise by indigenous medical systems. According to the WHO, herbal medicines are still used by roughly 75-80 percent of the world's population. According to the WHO, around 25% of contemporary medications are derived from traditional plant sources, while research on traditional medicinal herbal plants contributes to the discovery of 75% of herbal pharmaceuticals. Anti-inflammatory and analgesic medications now in use have a number of serious adverse effects, necessitating the creation of more strong analgesic and anti-inflammatory treatments with fewer side effects. ANALGESIC AND ANTI-

International Journal of Pharmaceutical Research and Applications
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INFLAMMATORY HERBS: A POTENTIAL SOURCE OF MODERN MEDICINE, according to the review article Herbal therapy outperformed synthetic medications in terms of safety, effectiveness, cultural acceptance, and side effects. So, the combination of herbal drugs show the best activity on inflammation.

It has been proven in so many clinical studies that combination of heral plants show synergistic effects on inflammation. According to a clinical study held by **Abida Parveen, Sultan Zahiruddin** and others the combination of **Phyllanthus emblica, Tinospora cordifolia and Piper nigrum** act as anti inflammatory in immunosuppresed mice. Accoring to a research published in the journal**Phytomedicine,**combination ofRutin, Glycyrrchzin, Gallic acid, Cinnamic acid, Chlorogenic acid, Caffeic acid and Piperine show anti inflammatory effect on asthema.

P. Padmanabhan and **S. N. Jangle conducted clinical study on** four selected plants which is Leaves of Aloe vera, Bacopa monnieri, Moringa oleiferaand rhizome ofZingiber officinaleshow in vitro anti inflammatory activity by effective RBC membrane stabilization and inhibition of protein denaturation.

The combination of the cortex of Phellodendron amurense (Rutaceae)and the rhizomes of Coptis chinensis Franch (Ranunculaceae) show anti inflammatory activity given by **Eun-Kyung Park and Hae In Rhee.**

According to the reseach conducted by**Sang-Bae Han, Chang Woo Lee** and others, herbal combination BDX-1 isolated from Achyranthes bidentata and Atractylodes japonicahelp inprevention of arthritic inflammation.

Mukta Guptaand others proved that the combination of Shagoal (Zingiber officinale Roscoe), Curcumin (Curcuma longa L.), Boswellic acid (Boswellia serrata Roxb.), Quercetin (Allium cepa L.), Rosmarinic acid (Rosmarinus officinalis L.), Berberine (Coptis chinensis Franch) and Catechin (Camellia sinensis (L.) Kuntze) show synergistic anti inflammatory activities.

Besides them the combination of other herbal plants such as combination of Commiphora myrrha and Boswellia carterii, combination of Larrea divaricata Cav., Larrea cunefolia Cav, Larrea nitida Cav., Zuccagnia punctata Cav and Tetraglochin andina Ciald, combination of Scutellaria baicalensis and Eleutherococcus senticosus , combination of Rosa canina, Tanacetum vulgare, Urtica dioica, combination ofPhellodendron amurense and Coptis chinensis, combination of Phyllanthus emblica, Tinospora cordifoliaand Piper nigrum also show synergistic anti inflammatory effects in clinical studies.

After watching these clinical studies and reseaches we can easily say that the combination of herbal drugs can show good anti inflammatory activity.

V. CONCLUSION

Inflammation is a pathologic condition that includes a wide range of diseases such as rheumatic and immune-mediated conditions, diabetes, cardiovascular accident, and etcetera. Inflammatory crises can be controlled and suppressed using a variety of medications but they have a number of serious adverse effects. Hyperacidity, constipation, diarrhoea, nausea, Abdominal cramps, oral ulcers, weight gain, weight loss, bone and joint pains, hair fall, High blood pressure, liver toxicity, kidney toxicity, drowsiness are some common side effects we can see in the case of allopathic medicines but are less common in the case of herbal medicines. That's why herbal medicines is being used widely as it is more effective and have less adverse effects. . Herbal drugs have great potential in near future. The combination of herbal drugs can improve even more and can show promising effects in many diseases. In this review we mentioned some herbal plants which have anti-inflammatory activities. Fruits, Flowers or the whole parts ofCassia fistula, Caralluma thberculata, Kiekia acuminata, Citrus auranticumwill show promissing effects in near future when giving in combination. This review also gives a brief information about how different different combination of herbal drugs as a treatment in inflammation shows synergistic affects.

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