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## RECENT ADVANCES IN RESEARCH OF ANTIULCER DRUG OF NATURAL ORIGIN : A REVIEW

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### ABSTRACT

*Materia Medica provides lots of information on Folklore practice and tradition aspects of the therapeutically active important products. Herbal Drug are traditionally used in various part of the word to cure different disease. Alternative system of medicine like Ayurveda, Siddha and Unani are very famous medicinal practices in traditional medicine. It provides holistic approach to treat ulcer with success. According to World Health Organization (WHO), many people suffer from different type of ulcers every year. Present review has to focus on variety of medicinal plants which are traditionally used for treatment of ulcers such as Peptic Ulcer, Mouth Ulcer, Esophageal Ulcer, Genital Ulcers etc. A literature detail has kind attention on the antiulcer drug of natural origin with their suggested medicinal part, screening methodology and type of extract used for evaluation and investigation to prove its use. The objective of present review is to compile literature and proved use of certain medicinal plants as antiulcer agent.*

**Keywords:** Antiulcer agent, Herbal Drug, traditional medicine etc

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### INTRODUCTION

The cause of ulceration in patients is mainly due to hyper secretion of gastric juice and also due to hyper secretion of pepsin. An ulcer is basically an inflamed break in the skin or the mucus membrane lining the alimentary tract. Ulceration occurs when there is a disturbance of the normal equilibrium caused by either enhanced aggression or diminished mucosal resistance. About 19 out of 20

peptic ulcers are duodenal. Gastric ulcers, found in the stomach wall, are less common. The gastric mucosa is continuously exposed to potentially injurious agents such as acid, pepsin, bile acids, food ingredients, bacterial products (*Helicobacter pylori*) and drugs. These agents have been implicated in the pathogenesis of gastric ulcer, including enhanced gastric acid and pepsin secretion, inhibition of prostaglandin synthesis and

cell proliferation growth, diminished gastric blood flow and gastric motility.<sup>1</sup>

The goals of treating peptic ulcer disease are to relieve pain, heal the ulcer and prevent ulcer recurrence. A large number of spices and herbs have been evaluated by various researchers for their antiulcer effects to achieve a favorable outcome. In spite of being one of the well-known medicinal plants used in Indian traditional medicine to treat several ailments, studies pertaining to the pharmacological properties of some medicinal plants are very scarce. We studied the antiulcer activity and acute toxicity of some medicinal plants. Many researchers interpreted that the herbal medicine are used for various ulcerative condition to improve health o sufferer. Present review focus has to on folklore medicinal plants, which are traditionally used as antiulcer agent and enumerated review has attention on their medicinal part, screening methodology and type of extract used to investigate and compile data of recent advances in their research as a antiulcer.

#### Review of Literature

Traditional medicinal practitioners have claimed for centuries that extracts from plant can be effectively used for the evaluation of different type of ulcers. Except for the use of appropriate vaccine for the treatment ulcers caused by infection, some treatments are available today to cure ulceration. It

is not surprise, that a considerable interest has been taken by researcher to examine these number of traditional plant remedies, used for treating ulcers.

In recent year, investigations have been carried out to provide experimental evidence, conforming that many of plant have antiulcer activity.

Material medica provides lots of information ethno medicinal uses of traditional medicinal plants. Among them different plant families mention with their specific part having antiulcer activity.

Among the folklore data, plants species of different families are reported as antiulcer activity and evaluate for their protective mechanism. The aim of present work is to demonstrate ethno medicinal properties of folklore medicinal plants with their experimental evidence and proved used as a antiulcer. Present survey has attention and focus on certain herbs that are screened, evaluated and proved as antiulcer.

#### Plant investigated for its antiulcer activity

Material medica provides lots of information about ethno medicinal herbs, which are valuable as antiulcer agent and its use experimentally evaluated and proved by many researcher for its antiulcer activity. Following compiled data suggested that medicinal plant those are evidently reported for its antiulcer activity (Table.1).

**Table.1** – List of medicinal plant investigated for its antiulcer activity

| Sr. no | Plant name                                     | Family      | Plant part used | Type of Extract             | Methods of Screening                  |
|--------|--|-------------|-----------------|-----------------------------|---------------------------------------|
| 1      | <i>Abies pindrow</i> Royle <sup>(7)</sup>      | Pinaceae    | Leaves          | CE, AE and EE extracts      | CRS                                   |
| 2      | <i>Abutilon indicum</i> <sup>(8)</sup>         | Malvaceae   | Leaves          | Methanolic extract          | PL, Acetone & EI                      |
| 3      | <i>Adhatoda zylanica</i> <sup>(9)</sup>        | Acanthaceae | Leaves          | Water ,AE                   | EI                                    |
| 4      | <i>Aegle marmelos</i> Correa <sup>(7,10)</sup> | Rutaceae    | Seeds           | Methanolic,Aq-ueous extract | PL, ASP, GU                           |
| 5      | <i>Albizzia lebbeck</i> <sup>(12)</sup>        | Mimosaceae  | Leaves          | EE                          | PL,EI, Indomethacin induced           |
| 7      | <i>Allium sativum</i> <sup>(13,14)</sup>       | Liliaceae   | Bulb            | Bulb juice                  | EI, Indomethacin, Cold RS,CYS induced |
| 8      | <i>Alstonia scholaris</i> <sup>(15,16)</sup>   | Apocynaceae | Leaves          | EE                          | PL                                    |

|    |   |                  |                  |                              |  |
|----|---|------------------|------------------|------------------------------|--|
| 9  | <i>Amomum subulatum</i>                           | Zingiberaceae    | Fruit            | Methanolic extract           | EI,ASP                                     |
| 10 | <i>Anacardium occidentale</i> <sup>(17)</sup>     | Anacardiaceae    | Leaves           | EE                           | HCl/EI                                     |
| 11 | <i>Andrographis paniculata</i> <sup>(13,18)</sup> | Acanthaceae      | Leaves           | Hydroalcoholic extract       | CYS induced duodenal ulcer                 |
| 12 | <i>Annona squamosa</i> <sup>(19)</sup>            | Annonaceae       | Fruit            | EE                           | CRU, AL, ASP, PL, HA                       |
| 13 | <i>Asparagus acemosus</i> <sup>(7)</sup>          | Liliaceae        | Root             | Fresh juice                  | PL , CRU                                   |
| 14 | <i>Asparagus racemosus</i> <sup>(13,15,21)</sup>  | Asparagaceae     | Root             | Fresh juice                  | PL, EI .CRU                                |
| 15 | <i>Aspilia africana</i> <sup>(15,22)</sup>        | Asteraceae       | Leaves           | Methanolic extracts          | -  |
| 16 | <i>Azadirachta indica</i> <sup>(7,15,21,23)</sup> | Meliaceae        | Stem-Bark        | Bark water extract           | PL, CRU, Indomethacin, AL, HST, induced    |
| 17 | <i>Bacopa monniera</i> <sup>(7,21,24,25)</sup>    | Scrophulariaceae | Whole plant      | Methanolic extract           | PL, Stress induced, EI, ASP,AA,CRS         |
| 18 | <i>Bauhinia racemosa</i> <sup>(26)</sup>          | Caesalpiniaceae  | Fruit, Stem-Bark | Aqueous, alcoholic           | Paracetamol induced                        |
| 19 | <i>Bauhinia variegata</i> <sup>(15,27)</sup>      | Fabaceae         | Stem- Bark       | Aqueous extract              | EI, ASP induced, PL                        |
| 20 | <i>Allophylus serratus</i> <sup>(28)</sup>        | Sapindaceae      | Leaves           | EE                           | CRU, AL, ASP, PL                           |
| 21 | <i>Benincasa hispida</i> <sup>(13,15)</sup>       | Cucurbitaceae    | Fruit            | Methanolic fruit extract     | HCl/ EI, Indomethacin-HCl, ASP,PL          |
| 22 | <i>Bidens pilosa</i> <sup>(21,29)</sup>           | Compositae       | Aerial parts     | EE                           | AL, PL, Indomethacin induced               |
| 23 | <i>Bixa orellana</i> <sup>(20)</sup>              | Bixaceae.        | -                | Methanolic extract           | -  |
| 24 | <i>Bupleurum falcatum</i> <sup>(13,31)</sup>      | Apiaceae         | Roots            | -                            | EI,HCl-Ethanol,PL,Stress induced,          |
| 25 | <i>Calotropis procera</i> <sup>(13)</sup>         | Apocynaceae      | Root             | Root extract                 | EI,ASP,PL,Stress induced                   |
| 26 | <i>Camellia sinensis</i> <sup>(7,25,32)</sup>     | Theaceae.        | Leaves           | Hot water extract            | ASP , Indomithacin, serotonin,CRS, induced |
| 27 | <i>Carica papaya</i> <sup>(15,33)</sup>           | Caricaceae       | Fruit            | Aqueous & Methanolic extract | Indomethacin-induced                       |
| 27 | <i>Centella asiatica</i>                          | Apiaceae         | Whole plant      | Fresh juice                  | CRS.CRU, EI, ASP,                          |

|    |  |                 |                |                        |  |
|----|--|-----------------|----------------|------------------------|--|
|    |  |                 |                |                        | PL   |
| 28 | Chinese cinnamon                                   | Lauraceae       | Stem bark      | Aqueous extract        | Phenylbutazone, EI, water immersion stress             |
| 29 | Cissampelos mucronata                              | Menispermaceae  | Leaves         | Methanolic extract     | Indomethacin, HIST, stress induced                     |
| 30 | Convolvulus pluricaulis <sup>(7)</sup>             | Convolvulaceae  | Whole plant    | Fresh juice            | CRS, EI, ASP and PL                                    |
| 31 | Curcuma longa <sup>(13,35)</sup>                   | Zingiberaceae   | Rizomes        | EE                     | PL, EI   |
| 32 | Davilla rugosa <sup>(37,38)</sup>                  | Dilleniaceae    | Stems          | Hydroalcoholic extract | HCl/Ethanol, Immersion-restraint stress & Indomethacin |
| 33 | Dalbergia monetaria <sup>(13,36)</sup>             | Fabaceae        | -              | Aqueous extract        | PL, EI, HRS  |
| 34 | Datura fastuosa <sup>(7)</sup>                     | Solanaceae      | Leaves         | -                      | CRS, PL- and ASP                                       |
| 35 | Desmodium gagicum <sup>(21)</sup>                  | Papilionaceae   | -              | EE                     | CRU, ASP, PL and AL                                    |
| 36 | Dodonaea viscosa <sup>(39)</sup>                   | Sapindaceae     | Leaves         | Hexane extract         | EI, Indomethacin induced                               |
| 37 | Dombeya buettneri <sup>(13)</sup>                  | Sterculiaceae.  | Leaves         | Aqueous extract        | EI   |
| 38 | Eclipta Alba <sup>(13,40)</sup>                    | Compositae      | Whole plant    | Methanolic extract     | ASP, PL, EI  |
| 39 | Emblica officinalis <sup>(7,13,21,41,42, 43)</sup> | Euphorbiaceae   | Fruit          | EE                     | AL, ASP, CRU, PL, AA                                   |
| 40 | Enantia chlorantha <sup>(11,44)</sup>              | Annonaceae      | Rhizome, Bark  | EE                     | PL, EI   |
| 41 | Erythroxylum coca <sup>(11)</sup>                  | Erythroxylaceae | Leaves         | -                      | AL, ASP, PL, AA, Indomethacin                          |
| 42 | Excoecaria agallocha <sup>(45)</sup>               | Euphorbiaceae   | Bark           | Cold water extract     | NSAIDS   |
| 43 | Ficus arnottiana <sup>(21,46)</sup>                | Moraceae        | Leaves         | Methanolic extract     | PL, EI   |
| 44 | Ficus religiosa <sup>(7,47)</sup>                  | Moraceae        | Stem bark      | EE                     | CRS, PL, Indomethacin                                  |
| 45 | Flueggea microcarpa <sup>(7)</sup>                 | Phyllanthaceae  | Leaves & roots | -                      | ASP, CRS, PL,  |
| 46 | Garcinia cambogia <sup>(21,48)</sup>               | Clusiaceae      | Fruit          | Aqueous extract        | Indomethacin   |
| 47 | Ginkgo biloba <sup>(7,49)</sup>                    | Ginkgoaceae     | -              | EE                     | PL, EI   |
| 48 | Glycyrrhiza glabra <sup>(7,13,41)</sup>            | Fabaceae        | Roots          | Water decoction        | PL, CRS  |
| 49 | Hemidesmus indicus <sup>(7,21,50, 51)</sup>        | Asclepiadaceae  | Roots          | EE                     | ASP, PL, Indomethacin                                  |
| 50 | Holarrhena   | Apocynaceae     | Barks          | Water decoction        | PL, CRS  |

|    |   |                |            |   |  |
|----|---|----------------|------------|---|--|
|    | antidysenterica <sup>(7)</sup>                |                |            |   |  |
| 51 | Jasminum grandiflorum <sup>(52)</sup>         | Oleaceae       | Leaves     | EE                                      | ASP + PL   |
| 52 | Kielmeyera coriacea <sup>(15,17)</sup>        | Guttiferae     | Stem       | Water decoction                         | EI, Indomethacin                                       |
| 53 | Larrea divaricata <sup>(17)</sup>             | Zygophyllaceae | Leaves     | Methanolic extract                      | HCl induced  |
| 54 | Lawsonia inermis <sup>(53)</sup>              | Lythraceae     | Leaves     | Aqueous, Chloroform, EE                 | AI, PL   |
| 55 | Mammea americana <sup>(17,54)</sup>           | Guttiferae     | Bark latex | EE, Methanolic, Dichloromethane extract | Indomethacin, PL, EI, HCl induced                      |
| 56 | Matricaria recutita <sup>(13,55)</sup>        | Compositae     | Flower     | Aqueous extract                         | HCl induced  |
| 57 | Mikania cordata <sup>(13)</sup>               | Asteraceae     | Root       | AE                                      | ASP, EI, Phenylbutazone induce                         |
| 58 | Momordica charantia <sup>(56,57)</sup>        | Cucurbitaceae  | Fruits     | Methanolic extract                      | AA, PL, EI, stress induced, Indomethacin, CYS induced  |
| 59 | Morinda citrifolia <sup>(21,58)</sup>         | Rubiaceae      | Fruit      | Methanolic extract                      | ASP, AI, PL, CYS, HCl induced                          |
| 60 | Moringa oleifera <sup>(59,60,61)</sup>        | Moringaceae    | Leaves     | Methanolic extract                      | PL, Ibuprofen induced, Acetylsalicylic acid, serotonin |
| 61 | Mucuna pruriens <sup>(41)</sup>               | Fabaceae       | -          | -                                       | EI, PL   |
| 62 | Musa sapientum <sup>(7,21)</sup>              | Scitamineae    | Fruit      | EE                                      | ASP, EI, Phenylbutazone induce                         |
| 63 | Neurolaena lobata <sup>(13)</sup>             | Asteraceae     | -          | Hydroalcoholic extract                  | PL   |
| 64 | Nicotiana tabacum <sup>(11)</sup>             | Solanaceae     | Leaves     | -                                       | ASP  |
| 65 | Nigella sativa Linn <sup>(13,62)</sup>        | Ranunculaceae  | Seeds      | AE                                      | PL, ASP  |
| 66 | Ocimum basilicum <sup>(7)</sup>               | Lamiaceae      | Seeds      | -                                       | HIST, ASP, 5HT, Stress induce, EI                      |
| 67 | Ocimum sanctum <sup>(7,13,17,21,41, 64)</sup> | Labiatae       | Leaves     | EE                                      | ASP, EI, Phenylbutazone, 5HT, PL induce                |
| 68 | Ocimum Suave <sup>(63)</sup>                  | Lamiaceae      | Leaves     | Methanol extract                        | AA   |
| 69 | Pachysandra terminalis                        | Buxaceae       | -          | -                                       | RSI, WSI   |
| 70 | Phyllanthus emblica                           | Euphorbiaceae  | Fruits     | Water                                   | Indomethacin   |

|    |  |                  |              |                            |   |
|----|--|------------------|--------------|----------------------------|---|
|    |  |                  |              |                            | induced   |
| 71 | Phyllanthus niruri <sup>(13,67)</sup>              | Euphorbiaceae    | Aerial parts | Methanolic extract         | Indomethacin, Ethanol acid-, CRS -induced                             |
| 72 | Panax ginseng <sup>(13,65)</sup>                   | Araliaceae       | Leaves, Root | EE                         | HCl , EI  |
| 73 | Piper nigrum <sup>(41,68)</sup>                    | Piperaceae       | Fruit        | Petroleum Ether extract    | EI,PL   |
| 74 | Pistacia lentiscus <sup>(13,69)</sup>              | Anacardiaceae    | Stem         | Resin                      | PL,ASP,Phenylbutazon-e Reserpine, RS + cold stress                    |
| 75 | Plectranthus amboinicus <sup>(15,70)</sup>         | Lamiaceae        | Whole plant  | Ethyl acetate, EE, Aqueous | PL  |
| 76 | Pluchea indica <sup>(13,71)</sup>                  | Asteraceae       | Root         | Methanolic extract         | Idoxethacin,EI,Indomith-acin, Acetylsalicylic acid, Serotonin induced |
| 77 | Polyalthia Longifolia <sup>(15,72)</sup>           | Annonaceae       | Leaves       | EE, Aqueous extracts       | EI,PL,ASP   |
| 78 | Pongamia pinnata <sup>(7)</sup>                    | Fabaceae         | Seeds, Roots | PE, AE, CE, EE             | RS,PL   |
| 79 | Qualer grandiflora <sup>(17)</sup>                 | Vochysiaceae     | Bark         | Hydroalcoholic extract     | EI,CRS,Bethanecho I   |
| 80 | Rauwolfia serpentine <sup>(11)</sup>               | Apocynaceae      | -            | -                          | Stress induced  |
| 81 | Rhamnus procumbens <sup>(7)</sup>                  | Rhamnaceae       | Whole plant  | -                          | EI,PL,CRS, HIST   |
| 82 | Rheum ribes Linn <sup>(73)</sup>                   | Polygonaceae     | Leaves       | Methanol extract           | EI,PL   |
| 83 | Scoparia dulcis <sup>(17)</sup>                    | Scrophulariaceae | Aerial parts | Aqueous extract            | EI,Indomithacin induced   |
| 84 | Shilajit <sup>(7)</sup>                            | Eurporbiaceae    | -            | per se effect              | EI,PL,CRS, HIST   |
| 85 | Sophora flavescens <sup>(11)</sup>                 | Fabaceae         | Root         | -                          | EI, PL, Indomithacin  |
| 86 | Syzygium aromaticum <sup>(74,75)</sup>             | Myrtaceae        | Flower bud   | EE                         | EI,PL,Indomethacin induced  |
| 87 | Tectona grandis <sup>(7,13)</sup>                  | Verbenaceae      | Bark         | EE                         | PL, RS,HIST   |
| 88 | Terminalia chebula                                 | Combretaceae     | Fruit        | Methanolic extract         | EI,PL   |
| 89 | Terminalia pallida Brandis <sup>(7,21,77,78)</sup> | Combretaceae     | Fruit        | EE                         | Indomethacin, HIST, AL  |
| 90 | Trigonella foenumgraecum <sup>(41,78)</sup>        | Fabaceae.        | Seeds        | Aqueous extract            | EI,PL, Water immersion stress and Indomethacin                        |

|    |                    |            |      |    |    |
|----|--------------------|------------|------|----|----|
| 91 | Withania somnifera | Solanaceae | Root | EE | RS |
|----|--------------------|------------|------|----|----|

AE-Alcohol; ASP-Aspirin; CE-Chloroform; CRS-Cold restraint stress; CYS-Cysteamine; DU-Duodenal ulcer; EE-Ethanol; GP-Guinea pig; GU-Gastric ulcer; HIST-Histamine; PE-Petroleum ether; PL-Pylorus ligation; RS-Restraint stress; EI-Ethanol induced, AA-Acetic acid, AL-Alcohol induced

### DISCUSSION

Oldest medicinal systems in the world provides leads to find therapeutically useful compounds from plants. Therefore, ethno medicinal knowledge supported by modern science is necessary to isolate, characterise, and standardise the active constituents from herbal source. This combination of traditional and modern knowledge can produce better antiulcer drugs with fewer side effects. Herbs are widely available in different countries.

The present folklore review has to focus on the certain herbs, which are traditionally mentioned as a antiulcer in a folk literature of Materia Medica and are to be investigated for their antiulcer activity.

Research on natural products often is guided by ethnomedicinal knowledge, and has brought substantial contributions to drug innovation by providing novel chemical structures and/or mechanisms of action . Large number of herbal extracts are used in folk medicine to treat various types of disorders.

This review has wide scope for researcher to compile literature data of antiulcer drug and intense study on evaluated use of certain herbs for their better acceptability in therapeutics.

Hence the review study is concluded that the herbal drug possesses antiulcer activity and it has been proved by different animal models give many links to develop the future trials.

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