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Natural Treatment for Inflammatory Bowel Disease

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ABSTRACT

Inflammatory Bowel Disease (IBD) is an inflammatory disorder of the gastrointestinal tract with no cure at present. The allopathic drugs available for its treatment are associated with serious side effects which may worsen the patient's condition. From times immemorial man has been using plants not only as food but also for treatment of diseases. At present research is being conducted to find evidence regarding rationale for use of plants in the treatment of various diseases. In purview of these facts the review is aimed to securitize plants used for the treatment of IBD.

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Introduction

Inflammatory bowel disease (IBD) refers to two chronic diseases that cause inflammation of the intestines: ulcerative colitis (UC) and Crohn's disease (CD) that are immune mediated, multifactorial, chronic, relapsing and remitting gastrointestinal tract (GIT) disorders.¹ IBD is usually diagnosed in people in their late teens or early 20s, but it can appear at any age being more common in white people than in black people or those of Asian origin. The condition is most prevalent among Jewish people of European origin and affects slightly more women than men.

Both Crohn's disease and ulcerative colitis are chronic (long-term) diseases that involve inflammation of the gastrointestinal tract (gut). However, there are important differences between the two. Crohn's disease can occur anywhere in the digestive tract, often spreading deep into the layers of affected tissues. Ulcerative colitis usually affects only the innermost lining of the large intestine and rectum. Factors that can turn on the body's immune system include an infectious agent (as yet unidentified), an immune response to an antigen (for example, protein from cow milk), or an autoimmune process. The immune system



then starts attacking healthy tissue inside the digestive system, leading to inflammation.

The main symptoms of both these diseases are similar and include abdominal pain (more common in Crohn's disease than in ulcerative colitis), a change in bowel habits- urgent and/or bloody diarrhoea or (rarely) constipation, weight loss and extreme tiredness. These symptoms may vary from individual to individual and some people may experience nausea and fever also. Clinically it is characterised by disruption of epithelial barrier of GIT resulting in severe rectal bleeding, diarrhoea and the formation of epithelial ulceration.^{2,3}

Conventional Treatment for IBD

The main aim of therapy is to eliminate symptoms of IBD, prevent flare-ups (maintain long-term remission) and restore quality of life. For most people, medications control symptoms and promote healing. Surgery is usually needed only if medications fail to improve symptoms or if precancerous changes in the colon or serious complications occur.

At present no cure is available for treatment of IBD. The allopathic drugs presently available for treatment of IBD are used mainly to reduce infection and inflammation. They include aminosalicylates, anti-inflammatory steroids, corticosteroids, immunosuppressants and TNF (Tumour Necrosis Factor) inhibitors. However, side effects associated with these drugs are paramount and search is on for newer agents as well as for evidence based use of herbal medications.

Herbals Used to Treat IBD

Herbals are increasingly being used in the treatment of different disorders like hypertension,⁴ diabetic nephropathy⁵ etc. This review deals with 20 natural herbs that have

been scientifically validated for treatment of inflammatory bowel disease (IBD).

1. *Ageratum conyzoides* (Common name: White Weed, Billygoat Weed, Chick Weed, Goat Weed ; Family: Asteraceae)

A study conducted on the alcoholic extracts of *Ageratum conyzoides* has revealed that the extract in the dose of 500mg/kg and 700mg/kg p.o. significantly attenuates the macroscopic scoring, histopathological manifestations and raised levels of lipid peroxides and myeloperoxidase (MPO).⁶



Ageratum conyzoides

2. *Aloe barbadensis* (Common name: Aloe vera; Family: Liliaceae)

In a randomised, double-blind, placebo-controlled trial performed on humans it has been observed that oral administration of *aloe vera* gel for 4 weeks produced symptomatic relief in ulcerative colitis and the histopathological parameters.⁷



Aloe barbadensis

3. *Ananas comosus* (Common name: Pineapple; Family: Bromeliaceae)

Bromelain is a mixture of proteolytic enzymes obtained from the stem of pineapple plant which has been found to be effective in improvement of clinical and histologic severity of colonic inflammation in a murine colitis model of IL-10 deficient mice.⁸



Ananas comosus

4. *Bombax malabaricum* (Common name: Shalmali; Family: Malvaceae)

The aqueous extract of *Bombax malabaricum* (AEBM) has been found to significantly inhibit the edematous growth in indomethacin, acetic acid and iodoacetamide induced IBD in animal models. The results of this study have shown that AEBM at the dose of 270mg/kg reduces the macroscopic score, myeloperoxidase (MPO) level in indomethacin induced colitis in rats, whereas it has exhibited the same response at the dose of 500mg/kg in acetic acid induced colitis in mice.⁹



Bombax malabaricum

5. *Boswellia serrata* (Common name: Indian Frankincense ; Family: Burseraceae)

It has been traditionally claimed to be effective in treatment of inflammatory bowel diseases. Despite the traditional claims, *Boswellia* extracts are ineffective in ameliorating colitis in Dextran Sodium Sulphate (DSS) induced colitis in mice.¹⁰ In contrast to animal studies, a double-blind, randomized, placebocontrolled, multicenter trial in colitis patients has shown higher remission in the group treated with *Boswellia serrata* extract than in the placebo group.¹¹ A clinical study conducted on patients with IBD has shown that *Boswellia* resin reduces mucosal injury by inhibiting activity and adherence of activated leucocytes to intestinal mucosal cells.¹² However, a recent double-blind, placebo-controlled, randomized, parallel study in patients with Crohn's disease has shown no difference between the *Boswellia* treated group and control group in disease remission.¹³



Boswellia serrata

6. *Commiphora mukul* (Common name: Guggul; Family: Burseraceae)

Guggulsterone, a plant steroid found in the resin of *Commiphora* plant significantly reduces the severity of DSS-induced murine colitis as assessed by

clinical disease activity score, colon length and histology.¹⁴



Commiphora mukul

7. *Cordia dichotoma* (Common name: Indian Cherry, Fragrant Manjack, Bird Lime Tree ; Family: Boraginaceae)

Traditionally the bark of this plant has been used to treat ulcerative colitis. Methanolic extract of *C. dichotoma* has been seen to improve lesions and reduced colonic myeloperoxidase (MPO) and malondialdehyde (MDA) in acetic acid induced ulcerative colitis (UC) in male swiss mice.¹⁵



Cordia dichotoma

8. *Curcuma longa* (Common name: Turmeric; Family: Zingiberaceae)

A preliminary trial conducted on 5 patients suffering from ulcerative proctitis

has revealed significant improvement in their disease, after supplementing with curcumin, by inhibiting activation of NF-KB.¹⁶

A randomised, multicentre, double blind, placebo-controlled trial conducted on patients with UC revealed that relapse rate of the disease was reduced in the group receiving curcumin with sulfasalazine or mesalamine as compared to the placebo group receiving only anti-inflammatory medications.¹⁷



Curcuma longa

9. *Daucus carota* (Common name: Carrot; Family: Umbelliferae)

A study conducted in rats, using aqueous extract of *Daucus carota*, revealed that the extract significantly attenuated the various macroscopical parameters, histopathological alterations, as well as biochemical measurements in acetic acid induced UC in rats.¹⁸

***Daucus carota***

10. *Emblica officinalis* (Common name: Amla; Family: Euphorbiaceae)

Methanolic extract of fruit pulp of *Emblica officinalis* treated group showed a decrease in the ratio of colon weight/length and macroscopic scores for the inflammation. Histopathological examination of *E. officinalis* extract treated group revealed less damage and reduced LDH level compared to colitis induced group.¹⁹

***Emblica officinalis***

11. *Garcinia cambogia* (Common name: Gambooge, Brindleberry, Malabar Tamarind ; Family: Clusiaceae)

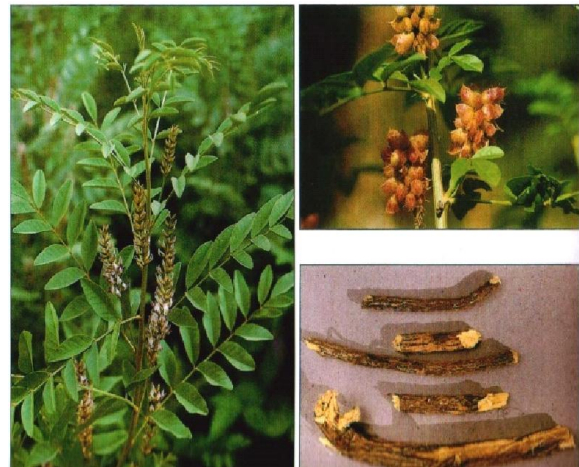
The alcoholic extract of *Garcinia cambogia* significantly improved the macroscopic damage and caused substantial

reductions in increased myeloperoxidase (MPO) activity, COX-2 and iNOS expression. In addition, garcinia extract treatment is shown to reduce PGE₂ and IL-1 β colonic levels.²⁰

***Garcinia cambogia***

12. *Glycyrrhiza glabra* (Common name: Licorice; Family: Fabaceae)

Diammonium glycyrrhizinate, a substance isolated and extracted from licorice has been shown to improve intestinal inflammation in rats as well as the expression of NF-K β , TNF- α and ICAM-1 in inflamed mucosa.²¹

***Glycyrrhiza glabra***

13. *Patrinia scabiosaefolia* (Common name: Golden lace; Family: Valerianaceae)

Methanolic extract of *P. scabiosaefolia* significantly attenuated dextran sulfate sodium induced colitis in mice. In addition, it also suppressed colonic MPO accumulation and pro-inflammatory mediators (TNF α , IL-1, IL-6 and nitric oxide).²²



Patrinia scabiosaefolia

14. *Pistacia lentiscus* (Common name: Mastic; Family: Anacardiaceae)

Treatment with oleogum resin obtained from *P. lentiscus* improved the symptoms of dextran sulphate sodium (DSS) induced colitis in mice.²³ A pilot study conducted in mild to moderate Crohn's disease patients demonstrated that mastic (resin) from *P. lentiscus* significantly reduced disease activity index, plasma IL-6 and C-reactive protein²⁴ and TNF α in peripheral blood mononuclear cells.²⁵ In addition, total antioxidant potential was significantly increased. No side effects were observed in mastic treated patients.²⁴



Pistacia lentiscus

15. *Plantago ovata* (Common name: Isabgol , Family: Plantaginaceae)

Its seeds ameliorated the development of colonic inflammation in transgenic rats as evidenced by an improvement of intestinal cytoarchitecture, significant decrease in some of the pro-inflammatory mediators and higher production of short-chain fatty acids.²⁶ An open label, parallel-group, multicenter, randomized clinical trial in patients with ulcerative colitis concluded that *Plantago ovata* seeds (dietary fiber) might be as effective as mesalamine to maintain remission in ulcerative colitis.²⁷



Plantago ovate

16. *Triticum aestivum* (Common name: Wheat; Family: Poaceae)

A double blind study has demonstrated that supplementation with wheat grass juice for 1 month resulted in clinical improvement in 78% of people with UC, compared with 30% of those receiving a placebo.²⁸



Triticum aestivum

17. *Turnera ulmifolia* (Common name: Yellow Alder; Family: Passifloriaceae)

Lyophilized infusion of *Turnera ulmifolia* ameliorates the colonic insult induced after intracolonic administration to rats by inhibiting oxidation of the β -carotene/linoleic acid system and lipid peroxidation.^{29,30}



Turnera ulmifolia

18. *Vitex negundo* (Common name: Five-leaved chaste tree; Family: Lamiaceae)

Ethanol extract of *Vitex negundo* significantly inhibited acetic acid induced ulcerative colitis and reduced colonic myeloperoxidase (MPO) and malondialdehyde (MDA) levels in mice.³¹



Vitex negundo

19. *Withania somnifera* (Common name: Ashwagandha; Family: Solanaceae)

The aqueous extract of *Withania somnifera* roots has been found to produce significant mucorestorative efficacy in the trinitro benzyl sulfonic acid (TNBS) induced IBD in rats as revealed by the decreased colon weight and better gain in body weight when compared to mesalamine treated group.³²



Withania somnifera

20. *Zingiber officinale* (Common name: Ginger; Family: Zingiberaceae)

Ginger is traditionally used to treat inflammatory gastrointestinal disorders. Ethanolic extract of dried rhizomes of ginger has displayed protective effects against acetic acid-induced ulcerative colitis in rats.³³



Zingiber officinale

Conclusion

Herbs are readily and abundantly available throughout India and can be harvested for use at any time. The above data indicates that they have high potential for treatment of IBD. Thus herbals can provide cheap treatment with less side effects for the treatment of inflammatory bowel disease.

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