

# Herbal Medicine in the Treatment of Ulcerative Colitis

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## ABSTRACT

Ulcerative colitis (UC) is a refractory, chronic, and nonspecific disease occurred usually in the rectum and the entire colon. The etiopathology is probably related to dysregulation of the mucosal immune response toward the resident bacterial flora together with genetic and environmental factors. Several types of medications are used to control the inflammation or reduce symptoms. Herbal medicine includes a wide range of practices and therapies outside the realms of conventional Western medicine. However, there are limited controlled evidences indicating the efficacy of traditional Chinese medicines, such as *aloe vera* gel, *wheat grass* juice, *Boswellia serrata*, and *bovine colostrum* enemas in the treatment of UC. Although herbal medicines are not devoid of risk, they could still be safer than synthetic drugs. The potential benefits of herbal medicine could lie in their high acceptance by patients, efficacy, relative safety, and relatively low cost. Patients worldwide seem to have adopted herbal medicine in a major way, and the efficacy of herbal medicine has been tested in hundreds of clinical trials in the management of UC. The evidences on herbal medicine are incomplete, complex, and confusing, and certainly associated with both risks and benefits. There is a need for further controlled clinical trials of the potential efficacy of herbal medicine approaches in the treatment of UC, together with enhanced legislation to maximize their quality and safety.

**Key Words:** Herbal medicine, inflammatory bowel disease, therapy, ulcerative colitis

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Ulcerative colitis (UC) and Crohn's disease, collectively known as inflammatory bowel disease (IBD), are chronic inflammatory conditions of the gastrointestinal (GI) tract. Although the etiology remains largely unknown, it has been suggested that a combination of genetic susceptibility factors and the activation of the mucosal immune system in response to luminal commensal bacterial antigens along with persistent pathologic cytokine production contributes to the initiation and chronification of IBD.<sup>[1-3]</sup> The incidence of UC is approximately 10–20 per 10<sup>5</sup> per year with a reported prevalence of 100–200 per 10<sup>5</sup> in Western countries.<sup>[4-6]</sup> However, UC in China has some differences in clinical characteristics, and a population-based epidemiologic study is required to determine the prevalence and incidence.<sup>[7]</sup> The number of UC patients has increased significantly in the past 10 years in China, lesions were commonly located

to the left side colon, males and females were nearly equally affected, no positive relationship was found between smoking and severity of the disease, and familial relatives were rarely involved.<sup>[7]</sup> Evidences have shown that poor adherence is an important barrier to successful management of the patients with UC.<sup>[8]</sup> Only 40%–60% of UC patients who were newly diagnosed or had longstanding disease are adherent to therapy.<sup>[9-11]</sup> Therefore, improving medication adherence has become one of the most important steps in the effective management of the disease.

To date, several medicines have been used in the treatment of UC, such as 5-aminosalicylate, azathioprine, 6-mercaptopurine, cyclosporine, and antitumor necrosis factor monoclonal antibody. The primary aims of medical therapy for patients with UC are directed at inducing and then maintaining remission of symptoms and mucosal inflammation to provide an improved quality of life with the least amount of steroid exposure.<sup>[12]</sup> In recent years, herbal medicines have been used in the treatment of UC and shown to be effective in the clinic. In this review, we survey the current knowledge of the herbal therapy or traditional Chinese medicine (TCM) for the treatment of patients with UC, and discuss recent progress in their role in disease prevention.

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## HERBAL MEDICINE

The term “herb” is derived from the Latin word *herba* meaning “grass.” The term has been applied to plants of which the leaves, stems, or fruit are used for food, for medicines, or for their scent or flavor. Herbal medicine refers to folk and traditional medicinal practice based on the use of plants and plant extracts for the treatment of medical conditions. The use of herbs to treat diseases is almost universal among native people. A number of traditions have come to dominate the practice of herbal medicine in the West at the end of the twentieth century. Herbal medicine is one of the most common TCM modalities. It has been estimated that 28.9% of US adults regularly use one or more TCM therapies, 9.6%–12.1% of which are in the form of herbal products.<sup>[13]</sup> Recent studies have indicated that the percentage of adults using TCM therapies for their GI symptoms ranges from 20% to 26%, but patients with functional GI disorders are more likely to make use of them, as are those with chronic GI conditions.<sup>[13,14]</sup>

The use of complementary medicine among patients with IBD, particularly in the form of herbal therapies, is widespread in the Western world as well as in many Asian countries including China and India.<sup>[15]</sup> It seems that the use is continuously increasing despite the fact that only a small number of controlled trials dealing with either efficacy or safety of these natural products exist. So far, there are limited controlled evidences indicating the efficacy of TCM, such as *aloe vera gel*, *wheat grass juice*, *Boswellia serrata*, and *bovine colostrum enemas* in the management of patients with UC.<sup>[16]</sup> Herbal medicine has always been considered to be preeminent among the various methods of healing within TCM, which is practiced extensively throughout clinics and hospitals in China alongside Western medicine.

There are numerous reports in the Chinese literature about the treatment of UC with herbal remedies, while only abstracts are available in English. It was noticeable that most of the respondents using herbal therapies believe that “natural” equates with “safe” and almost 30% of patients reported that such preparations cannot cause any harm. Herbs are dilute natural drugs containing many different chemicals, and their effects may be unpredictable. A few have been tested for their side effects, quality, or the potential for cross contamination by biological and chemical pollutants in the environments in which they are grown, transported, or sold.<sup>[16]</sup>

Currently, TCM is widely used in the treatment of UC in Eastern Asian countries. Langmead *et al* has reported that herbal remedies for the treatment of IBD include *slippery elm*, *fenugreek*, *devil’s claw*, *Mexican yam*, *tormentil*, and

*Wei tong ning* (a TCM).<sup>[16,17]</sup> *Slippery elm*, *fenugreek*, *devil’s claw*, *tormentil*, and *Wei tong ning* are novel drugs in the management of IBD. Chen *et al* reported that 118 cases of UC patients were treated with integration of TCM and that 86 cases of UC were treated with prednisone as controls.<sup>[18]</sup> The therapeutic effects were observed and compared after two therapeutic courses of 40 consecutive days. As a result, there were 39 cases cured, 60 cases improved and 19 cases failed, with a total effective rate of 84% in TCM-treated group. In contrast, there were 15 cases cured, 37 cases improved and 34 cases failed, with a total effective rate of 60.5% in prednisone-treated group ( $P < 0.01$ ). These data indicate that treatment of UC by the integrated TCM method is superior to that by simple Western drugs, such as prednisone and that it is also safe and effective in maintaining remission of UC.<sup>[16,18]</sup>

### Aloe vera

*Aloe vera* is a tropical plant used in traditional medicine throughout the world. It has been studied for its ability to relieve UC. *Aloe vera gel* is the mucilaginous aqueous extract of the leaf pulp of *Aloe barbadensis* Miller. *Aloe vera* juice has anti-inflammatory activity and been used by some doctors for patients with UC. It was the single most widely used herbal therapy.<sup>[19]</sup> A double-blind, randomized trial was undertaken to examine the effectiveness and safety of *aloe vera gel* for the treatment of mild-to-moderate active UC. Thirty patients took 100 mL of oral *aloe vera gel* and 14 patients had 100 mL of a placebo twice daily for 4 weeks. Clinical remission, improvement, and response occurred in 9 (30%), 11 (37%), and 14 (47%), respectively, in *aloe vera*-treated patients compared with 1 (7%), 1 (7%), and 2 (14%), respectively, in controls.<sup>[17]</sup> Although the numbers are small in this study, the number of patients who responded to *aloe vera* is more than those who took placebo. However, the numbers are similar to placebo responses in other trials and the placebo response rate is very low. The exact mechanisms of action of *aloe vera* are unclear. *In vitro* studies on human colonic mucosa have demonstrated that *aloe vera gel* could inhibit prostaglandin E2 and IL-8 secretion, indicating its role in antimicrobial and anti-inflammatory responses.<sup>[17]</sup>

### Boswellia serrata

*Boswellia* or Indian frankincense is an ayurvedic herb that is derived from the resin of the plant, and has also been used traditionally to treat UC. Boswellic acid, the major constituent of *Boswellia*, is thought to contribute to most of the herbal pharmacologic activities. *In vitro* studies and animal models have shown that boswellic acid could inhibit 5-lipoxygenase selectively with anti-inflammatory and antiarthritic effects.<sup>[20]</sup> Since the inflammatory process in IBD is associated with increased function of leukotrienes, the benefits of *Boswellia* in the treatment of UC have proven a positive result. Moreover, it has also been found

to directly inhibit intestinal motility with a mechanism involving L-type  $\text{Ca}^{2+}$  channels. *Boswellia* has been found to reduce chemically induced edema and inflammation in the intestine in rodents. Other studies suggest that it has cytotoxic properties.<sup>[21]</sup>

Gupta *et al* studied the treatment of 30 patients with chronic UC, and gave 20 patients a *Boswellia* gum preparation (900 mg daily divided into 3 doses for 6 weeks), and 10 patients sulfasalazine (3 gm daily divided into 3 doses for 6 weeks). They concluded that *Boswellia* was an effective treatment with few side effects, because 14 out of the 20 patients treated went into remission, and furthermore, 18 out of the 20 patients found an improvement in one or more parameters. In comparison, in the group taking sulfasalazine, 4 out of 10 went into remission, and 6 out of 10 showed improvement in one or more of the above parameters.<sup>[22]</sup> In animal models of inflammation, it has been shown to be effective against Crohn's disease, UC, and ileitis.<sup>[23]</sup>

### Butyrate

*Butyrate* is an important energy source for intestinal epithelial cells and plays a role in the maintenance of colonic homeostasis. Butyrate enemas have been studied for use in treating UC. Some studies have shown that the topical use of butyrate may help decrease the inflammation in the colon. Nancey *et al* proposed a possible explanation for the decreased oxidation in UC patients who showed that butyrate oxidation could be reduced by  $\text{TNF-}\alpha$  at concentrations found in inflamed human mucosa.<sup>[24]</sup> This anti-inflammatory effect of butyrate via  $\text{NF-}\kappa\text{B}$  inhibition, contributing, for example, to decreased concentrations of myeloperoxidase, cyclo-oxygenase-2, adhesion molecules, and different cytokine levels, has been confirmed in several *in vitro* and *in vivo* studies.<sup>[25,26]</sup> A diminished capacity of the intestinal mucosa to oxidize butyrate has been reported in patients with active UC.<sup>[27]</sup> However, in patients with inactive UC a normal butyrate oxidation has been found *in vivo*, suggesting that in UC patients, abnormal butyrate oxidation is not a primary defect in colon mucosa.<sup>[28]</sup> Administration of enteric-coated tablets (4 g of butyrate daily) in combination with mesalazine vs mesalazine alone significantly improved the disease activity score in patients with mild-to-moderate UC.<sup>[29]</sup>

### Licorice

*Licorice*, which is derived from the root of the plant, is used extensively in TCM for a variety of conditions and ailments. Licorice has also got immune modulatory and adaptogenic property, which is required for the pathogenesis of UC. A number of active chemicals, including glycyrrhizin are thought to account for its biologic activity. Diammonium glycyrrhizinate is a substance that is extracted and purified from licorice, and may be useful in the treatment of UC.<sup>[30]</sup>

Evidence has also reported that diammonium glycyrrhizinate could improve intestinal mucosal inflammation in rats and, importantly, reduce expression of  $\text{NF-}\kappa\text{B}$ ,  $\text{TNF-}\alpha$ , and ICAM-1 in inflamed mucosa.<sup>[31]</sup> Clinical studies on licorice have also been performed in combination with other herbs and demonstrated to be effective in the management of UC.<sup>[32]</sup> The antiestrogenic action documented for glycyrrhizin at high concentration has been associated with glycyrrhizin-binding estrogen receptors. However, estrogenic activity has also been reported for licorice and is attributed to its isoflavone constituents.<sup>[33]</sup> It has been suggested that glycyrrhizin may exert its mineralocorticoid effect via an inhibition of 11 $\beta$ -hydroxysteroid dehydrogenase. Evidences have proven that glycyrrhizin could also suppress both plasma renin activity and aldosterone secretion. In addition, licorice has been shown to have chemopreventive effects through influencing Bcl-2/Bax and inhibiting carcinogenesis.<sup>[33-35]</sup>

### Slippery elm (*Ulmus fulva*)

*Slippery elm* is a supplement that is made from the powdered bark of the slippery elm tree. It has long been used by Native Americans to treat cough, diarrhea, and other GI complaints. Recently, slippery elm has been studied for use as a supplement for IBD.<sup>[36]</sup> A study has confirmed the antioxidant effects of slippery elm when used in patients with IBD. The research so far has been promising, but there is not enough to warrant the widespread use of slippery elm in the treatment of IBD.<sup>[16]</sup>

### Tormentil extracts

*Tormentil* extracts have antioxidative properties and are used as a complementary therapy for chronic IBD. In individual patients with UC positive effects have been observed. Sixteen patients with active UC (clinical activity index  $\geq 5$ ) received *tormentil* extracts in escalating doses of 1200, 1800, 2400, and 3000 mg/day for 3 weeks each. Each treatment phase was followed by a 4-week washout phase. The outcome parameters were side effects, clinical activity index, C-reactive protein, and tannin levels in patient sera. Mild upper abdominal discomfort was experienced by 6 patients (38%), but did not require discontinuation of the medication. During therapy with 2400 mg of *tormentil* extracts per day, median clinical activity index, and C-reactive protein improved from 8 (6 to 10.75) and 8 (3 to 17.75) mg/L at baseline to 4.5 (1.75 to 6) and 3 (3 to 6) mg/L, respectively. During therapy, the clinical activity index decreased in all patients, whereas it increased during the washout phase. Neither undegraded nor metabolized tannins could be detected by liquid-mass spectrometry in sera. *Tormentil* extracts appeared safe up to 3000 mg/day.<sup>[37]</sup>

### The wheat grass (*Triticum aestivum*)

The wheat grass juice has been used for the treatment of various GI conditions. A double-blind study has

demonstrated that supplementation with wheat grass juice for 1 month results in clinical improvement in 78% of people with UC, compared with 30% of those receiving a placebo.<sup>[38]</sup> The amount of wheat grass used is 20 mL per day initially, and this is increased by 20 mL/day to a maximum of 100 mL per day (approximately 3.5 ounces). No serious side effects are noticed. Wheat grass juice appears to be effective and safe as a single or adjuvant treatment of active distal UC.

### Curcumin

*Curcumin* is a compound in turmeric (*Curcuma longa*) that has been reported to have anti-inflammatory activity. It has been found to induce the flow of bile, which helps break down fats. Additionally, it could reduce the secretion of acid from the stomach and protect against injuries such as inflammation along the stomach (gastritis) or intestinal walls and ulcers from certain medications, stress, or alcohol. In a preliminary trial, 5 of 5 people with chronic ulcerative proctitis had an improvement in their disease after supplementing with *curcumin*. *Curcumin* inhibits the activation of NF- $\kappa$ B. NF- $\kappa$ B promotes the synthesis of many antioxidant enzymes. *Curcumin* directly binds to thioredoxin reductase and irreversibly changes its activity from an antioxidant to a strong pro-oxidant.

The amount of *curcumin* used was 550 mg twice a day for 1 month, followed by 550 mg 3 times a day for 1 month.<sup>[39]</sup> Hanai and colleagues published the results of the first randomized, multicenter, double-blind, placebo-controlled trial from Japan to study *curcumin*'s effect on UC maintenance.<sup>[40]</sup> All 97 patients who enrolled and 89 patients who completed the study took a standard dose of mesalamine or sulfasalazine and either 1 g of *curcumin* or placebo twice daily for 6 months and then were followed for another 6 months off study medications. The relapse rate at 6 months on therapy was greater for the placebo group than for those who took *curcumin* ( $P = 0.049$ ). Thus, *curcumin* may confer some additional therapeutic advantages when used in combination with conventional anti-inflammatory medications in UC.

### Germinated barley foodstuff

Two open-label Japanese trials have shown the efficacy of Germinated barley foodstuff (*GBF*) in the treatment of UC, consisting mainly of dietary fiber and glutamine-rich protein that function as a probiotic.<sup>[41-44]</sup> In the first report, 11 patients given *GBF* for 4 weeks as an adjunctive treatment showed a greater decrease in clinical disease activity than 9 patients given conventional therapy alone. In a follow-up study, 24 weeks of treatment of 21 patients with *GBF* together with continuing 5-aminosalicylic acid and steroid therapy reduced rectal bleeding and nocturnal diarrhea. Adjunctive *GBF* also produced a lower relapse rate over 12 months when given to 22 patients with UC in remission than

did conventional therapy in 37 patients.<sup>[45]</sup> The potency of *GBF* on modulating microflora, as well as the high water-holding capacity, may play an important role in the treatment and prolongation of remission in UC.<sup>[42]</sup>

### Bromelain

*Bromelain* is an anti-inflammatory and has been used as a digestive aid and a blood thinner, as well as to treat sports injuries, sinusitis, arthritis, and swelling. *Bromelain* has been studied for use as a supplement for IBD, especially UC. Emerging research on pineapple suggests that pineapple's "active" component, *bromelain*, may help relieve the inflammation associated with UC. The mechanisms that are primarily responsible for its anti-inflammatory effects are still unclear. However, proteolytic activity is required for the anti-inflammatory effect of *bromelain* on T-cell activation and cytokine secretion *in vitro* and in murine models of IBD *in vivo*.<sup>[46,47]</sup> The major mechanism of action of *bromelain* appears to be proteolytic in nature, although evidence also suggests an immunomodulatory and hormone-like activity acting via intracellular signaling pathways. *Bromelain* has been shown to reduce cell surface receptors, such as hyaluronan receptor CD44, which is associated with leukocyte migration and induction of pro-inflammatory mediators.<sup>[48,49]</sup> Additionally, *bromelain* is also reported to significantly reduce CD4<sup>+</sup> T-cell infiltrations, which are primary effectors in animal models of inflammation in the gut. *Bromelain* 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.<sup>[50]</sup> Previous work also reported clinical trial with *bromelain* in the treatment of mild UC. Although those 2 patients were unable to achieve remission on standard therapy, clinical and endoscopic evidence of improvement was documented.<sup>[51]</sup>

### Psyllium

*Psyllium* comes from a shrub-like herb called *Plantago ovata* and is classified as a mucilaginous fiber due to its gel-forming properties in water. It has a long history of use as a laxative as it absorbs water and expands as it travels through the digestive tract. The *psyllium* husk contains a largely insoluble fiber (hemicellulose), which helps to retain water within the bowel and effectively increases stool moisture content and weight. Soluble fibers (including *psyllium*) are noted for their effect on the stomach and small intestine, whereas insoluble fibers are noted for their effect on the large intestine, although some carbohydrates (such as *psyllium*) have an effect on both.<sup>[52]</sup> *Psyllium* also has hypocholesterolemic effects, although the exact mechanism by which *psyllium* husk brings about a reduction of cholesterol is not totally clear. Animal studies have shown that *psyllium* increases the activity of cholesterol 7 $\alpha$ -hydroxylase (a rate-limiting enzyme in bile acid synthesis, also referred to as cytochrome



7A) more than twice that of cellulose or oat bran, but less than cholestyramine. In animals fed a high-fat diet, *psyllium* could increase the activity of cholesterol 7 $\alpha$ -hydroxylase and HMG-CoA reductase.

In a double-blind trial, patient with UC had a reduction in symptoms such as bleeding and remained in remission longer than those who took 20 g of ground *psyllium* seeds twice daily with water compared with those who were on the medication mesalazine alone.<sup>[53]</sup>

There are many trials on herbal medicine for UC except mentioned above, which has good response. *Withania somnifera*, member of family *Solanaceae*, has good response in anti-inflammatory activity. Immunomodulatory role of *W. somnifera* roots and anti-inflammatory activity using adjuvant-induced arthritic rat models was also demonstrated.<sup>[54]</sup> Considering the various biological activities, roots of *W. somnifera* can potentially be utilized for the effective treatment of various inflammatory conditions. Recently, Pawar *et al* studied that dose of the rectal gel applied at 1000 mg of WSRE (*Withania somnifera* root extract) per kg rat weight showed significant mucorestorative efficacy in the IBD-induced rats.<sup>[55]</sup>

The present study analyzed the intestinal anti-inflammatory potential of oil-resin *Copaifera langsdorffii* (ORCL) and its diterpene constituent, *kaurenoic acid* (KA) in rat models of UC induced by acetic acid (AA-UC), and *trinitrobenzene sulfonic acid* (TNBS-UC), and in indomethacin- and ischemia-reperfusion-induced intestinal inflammation (IND-II and I/R-II).<sup>[56]</sup>

Plant *tannins* can help decrease the inflammation of UC patients. Patients with UC don't have the protective benefit of normal mucin production, which can also leave them vulnerable to oxidized molecules increase the inflammation and mucosal injury seen in UC. The *tannins* appear to exert a protective effect against oxidative stress-induced cell death.<sup>[57]</sup> Condensed *tannins* can also help return the GI flora to a state of balance. Patients with UC have GI flora that favor pathogenic bacteria.<sup>[58]</sup> Current research with flavonoids and UC demonstrate a protective effect in mice treated with the colitis-inducing agent, dextran sulfate sodium, so as to prevent the occurrence of colitis.<sup>[59]</sup> Green tea polyphenols have shown similar benefits in mice by attenuating colonic injury induced by experimental colitis.<sup>[60]</sup>

*Guggulsterone* is a plant steroid found in the resin of the guggul plant, is an anti-inflammatory compound with the capacity to prevent and ameliorate T-cell-induced colitis. These data ground the use of GS, a natural cholesterol-lowering agent, in the treatment of chronic inflammatory diseases.<sup>[61]</sup> *Guggulsterone* inhibits LPS- or IL-1b-induced

ICAM-1 gene expression, NF- $\kappa$ B transcriptional activity, I $\kappa$ B phosphorylation/degradation, and NF- $\kappa$ B DNA-binding activity in IEC and strongly blocked IKK activity. *Guggulsterone* significantly reduced the severity of DSS-induced murine colitis as assessed by clinical disease activity score, colon length, and histology. Furthermore, tissue upregulation of I $\kappa$ B and IKK phosphorylation induced by DSS was attenuated in guggulsterone-treated mice.<sup>[62]</sup> The guggulsterone derivative GG-52 has both protective and therapeutic effects on inflammation in the colon, indicating that it has a potential clinical value for the treatment of IBD.<sup>[63]</sup>

There is small clinical study with 21 ulcerative colitis and Crohn's disease patients showed a proprietary extract of *Agaricus subrufescens* (*agaricus blazei*) had an anti-inflammatory effect.<sup>[64]</sup> Xu *et al.* found the therapeutic effect of herb-partitioned spread moxibustion for treatment of chronic nonspecific UC is better than that of the oral administration of sulfasalazine with less adverse reaction. Sixty cases were randomly divided into a spread moxibustion group ( $n = 28$ ) and a western medicine group ( $n = 32$ ). The cured-markedly effective rate was 71.4% (20/28) in the spread moxibustion group, and 25.0% (8/32) in the western medicine group.<sup>[65]</sup>

A new herbal drug *Fufangkushen colon-coated* (FCC) capsule, is effective and safe in the treatment of active UC. In the double-blind, double-dummy, multicenter, randomized, and controlled study, 320 active UC patients with TCM pattern of damp-heat accumulating in the interior were assigned to 2 groups: 240 treated with FCC plus HD placebo treatment, 80 with HD plus FCC placebo. At the 8th week, 72.50% of patients in FCC group (170 of 234) and 65.00% of patients in HD group (52 of 80) had achieved a clinical response.<sup>[66]</sup> One of the Chinese herbal suppository named Qingchang Shuan is commonly used for the treatment of UC. It has the effects of clearing away heat and toxic materials, and promoting tissue regeneration by removing blood stasis.<sup>[67]</sup>

Although many of these herbs seem to be effective in the management of UC based on clinical experiences, the long-term efficacies of these herbal medicines need further investigation.

## CONCLUSION

UC is a chronic medical condition that may require patients to take medication throughout their lives to prevent relapse, reduce the risk of colorectal cancer and improve quality of life. Although patients at all stages of UC are affected by nonadherence, those in symptomatic remission are particularly at risk for poor adherence, often taking less than 70% of their prescribed medication.<sup>[9,10,51]</sup> Herbal

medicine remedies are able to treat a wide range of acute and chronic GI disorders, including UC. Herbals mentioned above represent a simple paradigm of what is in regular use by patients with UC in many countries of the world. Physicians should address their patients straightforwardly regarding this kind of treatment and offer evidence-based information about their use. At the same time, large clinical double-blind studies assessing the most commonly used alternative therapies are needed. These herbal medicines have often been tested in their traditional context and have also been found to be useful in novel and exciting ways, thereby opening up new avenues for the treatment of pathologic states. Most herbal medicines undergo a similar level of rigorous testing as pharmaceutical medicines and there are positive examples of successful biochemical, animal model, and human-controlled trials within the literature. As a result, the manufacture, marketing, and prescribing of herbal medicines is now at an unprecedented level and is expected to continue to grow. Many herbal medicines are effective when used as therapeutic agents in treating illness and disease. Thus, herbal medicine is one of the great medical systems of the world, with an unbroken tradition dating back to the third century BC.

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1. **The psychopathology of duodenal ulcer compared with functional dyspepsia: a case-control study.**  
Abdel Hafeiz HB, Al-Quorain A, Karim AA, Al-Mangoor S.  
Department of Psychiatry, College of Medicine, Dammam, Saudi Arabia.

**Abstract**  
This is a prospective study of the psychiatric morbidity in 80 patients with duodenal ulcer, 80 with functional dyspepsia and 80 healthy controls; matched for age, sex and marital status. A semi structured psychiatric interview and clinical mental state examination were used in the psychiatric assessment of the patients and controls. Psychiatric diagnoses were made according to DSM3-R. A modified version of Life Events Scale by Tennant and Andrews was used in the assessment of life events in relation to psychiatric illness. Psychiatric illness was significantly more in the patients than the controls. Anxiety and depressive disorders dominated the clinical picture and the symptoms were usually of mild nature. Other neurotic were rare and psychotic illness was absent. Though more psychiatric patients experienced life events than the controls, differences, however were not statistically significant. Further studies are needed, especially in relation to the causative association between the functional dyspepsia and psychiatric disturbances.

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