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Complementary and alternative medicine in patients with irritable bowel syndrome: A Pilot Study

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Abstract

Irritable bowel syndrome (IBS) is considered a chronic functional bowel disorder that causes abdominal pain, bloating, alternating diarrhea and constipation without affecting structural and biochemical components. Recent reports suggest that irritable bowel syndrome patients have psychological associations. A higher correlation of anxiety and depression with the onset of irritable bowel syndrome has been observed. Psychological treatments and pharmacotherapies have been used for the management of IBS comorbidities such as anxiety and sleep deprivation. Traditional medicine has been used for the treatment of various psychological disorders. Especially Kava kava Ext. (*Piper methysticum*), which contains kavalactones as an active ingredient, is very effective in treating anxiety, insomnia and depressive disorders. In this study, we have evaluated the effect of Kava kava on alleviating anxiety and promoting sleep in patients with irritable bowel syndrome. It was a prospective, observational, single-center study conducted on 52 IBS patients. All of them were given a 500 mg capsule of Kava kava Ext. (*Piper methysticum*) for 4 weeks, twice a day. The result showed a significant reduction in anxiety and improved sleep quality with the use of Kava kava in the treatment of irritable bowel syndrome among patients. This study provides good evidence in support of Kava kava Ext. (*Piper methysticum*) for the treatment of irritable bowel syndrome.

Keywords: Irritable bowel syndrome (IBS); Kava kava; *Piper methysticum*; Complementary and Alternative Medicine; Constipation; Bloating

1. Introduction

In relation to the gastrointestinal tract, Irritable bowel syndrome (IBS) is considered a functional disorder [1]. IBS patients show a history of overstress or misshapen bowel movements followed by constipation and/or diarrhea along with abdominal discomfort or pain without any abnormal defect of structure [2]. Recent research reports suggest it as an imbalance in the brain-gut axis [3]. It is connected to visceral hypersensitivity associated with digestive motor disturbances that result in micro-inflammation of the gut. Thus, broadly disturbed intestinal bio flora [4] causes IBS. Additionally, IBS symptoms are frequently triggered or made worse by daily stress [5], stressful life events [6] and past unfavorable childhood experiences [7] are known factors for the development of IBS. The global prevalence of IBS was reported as 11.2% observed more in women as compared to men [8]. In India, the overall reported prevalence of IBS was around 4.2% [9]. It was observed in previous studies that up to 70-90% of patients had psychological associations with IBS [10]. It includes depression in 30% of patients [11], anxiety in 37% of patients [8], schizophrenia in 19.15% of patients [12] and Dysthymia in 59.32% of patients [13]. Treatment advised for these comorbid conditions includes psychological therapy, pharmacotherapy or a combination of both as per individual need [14]. Standard pharmacotherapy includes Selective serotonin reuptake inhibitors (SSRI), serotonin-norepinephrine reuptake

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Inhibitors SNRI, Tricyclic antidepressant, Calcium modulator, Azapirone, reversible monoamine oxidase A inhibitor (RIMA) [15]. Plant-based medicines [16-18] under Complementary and alternative medicine (CAM) can be considered as potential pharmaceutical options [19].

Typically, the *Piper methysticum* root is used to make kava drinks. Pacific Islanders have been eating them for millennia. Anxiety was once treated in Europe with kava extract preparations as an herbal medicine. Kava is becoming more well-known as a recreational beverage in Western nations and is being sold as a dietary supplement in the United States. Recent research suggests that kava and its primary phytochemicals offer additional health benefits beyond the well-known neurological ones, including anti-inflammatory and anticancer properties. [20]. Studies conducted with Kava kava (kavalactones) were reported to be effective in anxiety [21], insomnia [22] and depressive disorders [23]. A randomised controlled trial with 75 participants found that 26% of the Kava Kava group, which was compared to 6% of the placebo group, showed remission of anxiety in the HAMA score ≤ 7 evaluation [24]. Depression Spectrum Study also supports the short-term Kava kava administration in anxiety ($d=2.24$). This pilot trial was conducted on the effect of *Piper methysticum* in relieving anxiety and promoting sleep in patients with IBS [25].

2. Materials and Methods

2.1. Study design and ethics

This was a prospective, single-center, observational clinical trial conducted over a period of 4 weeks in a Healing Hands Clinic, Pune, Maharashtra, India; <https://www.healinghandsclinic.co.in/>. It was conducted only after getting approval from a Healing Hands Independent Ethics Committee and conducted as per drug and cosmetics rule 1945 of schedule Y, ICMR national ethical guidelines for biomedical and Health research involving human participants and as per the declaration of Helsinki. Every participant selected was carefully screened and informed about the study details till the satisfaction. Written informed consent was obtained from each patient before enrolling as a participant in the study.

2.2. Aim and Objective

To evaluate the effect of *Piper methysticum* in relieving anxiety and promoting sleep in patients with IBS.

2.3. Patients

All consenting adults of any gender aged between 18 and 78 years were judged by the investigator to be in ROME III criteria. No patient had a coexisting condition, and all of them had normal biochemistry, hematology, urinalysis, stool culture, and if they were older than 40 and presenting with irritable bowel syndrome for the first time. Patients were excluded if they showed any alarming symptoms that were not explained, such as weight loss of more than 10% of body weight, fevers, blood in the faeces, or a family history of colon cancer or inflammatory bowel disease. Also, all Non-cooperative, Other gastrointestinal disorders, aggressive, hospitalization or similar history, known hypersensitivity or allergy, vulnerable population, and HIV or AIDS-positive patients were excluded. Any surgery within the past 30 days, pregnancy, breastfeeding or participation in another clinical study within 30 days prior to the start of the study were also excluded.

2.4. Study Drug

The investigational product Kava kava Ext. (*Piper methysticum*) root is a perineal shrub and a member of the pepper family [26]. Various uses and pharmacological properties such as Anti-inflammatory activity, Anxiolytic activity, Sedative property, Antioxidant property, Antitumor activity and Immunomodulatory activity of the isolated kavalactones from the roots of kava have been reported [27]. Kava kava Ext. (*Piper methysticum*) root 500 mg Capsules, obtained from Healing Hands & Herbs Pvt. Ltd.; <https://myhealinghands.in/>

2.5. Study Conduct

Enrolled patients were advised to take Kava kava Ext. (*Piper methysticum*) in a 500 mg capsule for four weeks along with standardized available treatment. We have compared before treatment baseline data to the 4-week treatment data (Table 3). Online freely available Validated and standardized Hamilton Anxiety Rating Scale (HAM-A) Questionnaires for anxiety [28] and sleep quality questionnaires were answered by each enrolled participant. All responses were analyzed statistically to measure treatment outcomes. Visual analogue scale (VAS) [29] was used to measure the abdominal discomfort, abdominal pain, abdominal distension and satisfaction with bowel habits, IBS affecting lifestyle on a scale of 1-10. A total of six parameters were tested in the Liver function test for each participant. Parameters observed were SGPT (Serum Glutamic Pyruvic Transaminase), SGOT (serum glutamic-oxaloacetic transaminase, Bilirubin-Total, Bilirubin-Direct, Bilirubin-Indirect, Alkaline phosphatase to evaluate possible harm to the liver.

2.6. Statistical Analysis

Outcome data were analyzed by using a paired t-test at a 5% level of significance. Data is presented as mean (SD). All p values were two-tailed and $p < 0.05$ was considered statistically significant.

3. Results

Data from a total of 52 IBS patients were analyzed as per predefined study objectives. The study did not confirm any gender association however male was found more in number as compared to female. The male (67.30%) to female (32.70%) ratio was 2:1 (Table 1). The mean age (SD) of the participants was 41.06 years (12.49) ranging from 18 years to 78 years. A maximum number of patients were found in age between 21 to 60 years (Table 2). 1.9% of patients were found in the age group <20 years as well as in >61 year participants.

Table 1 Population Characteristics

Characteristics	Mean (SD)
Age Mean (SD)	41.06(12.49)
Sex	
Female	17 (32.70)
Male	35 (67.30)

Table 2 Number of Patients according to age

Age Group (year)	N	%
<20	1	1.9%
20-30	12	23.1%
30-40	14	26.9%
40-50	11	21.2%
50-60	12	23.1%
60-70	1	1.9%
70<	1	1.9%
Total	52	

VAS mean (ds) score before treatment was 4.62 (1.88) higher as compared to after treatment score 2.83 (2.26) ($p < 0.001$). Other scores like Abdominal pain mean score is higher before treatment 4.75 (2.46) to after treatment 3.1 (2.65), abdominal distention mean score before and after treatment mean score was 5.08 (2.14) to 2.90 (2.4), Satisfaction bowel habit mean score before treatment was 5.48 (2.05) to after treatment 3.21 (2.48), IBS affecting lifestyle mean score before treatment was 5.42 (1.8) to after treatment 2.88 (2.49), Anxiety mean score before treatment was 4.88(2.46) to after treatment 2.06 (2.17), lastly, Sleep mean score is higher before treatment 5.19 (2.31) to after treatment 2.12 (2.18) all have p-value < 0.001 (Table 3). Liver function test showed no significant harm in any of the enrolled participants as mentioned in (Table 4).

Table 3 Baseline Characteristics and Treatment Effectiveness

	Mean (SD) of VAS		
	Before Treatment	After 4 Weeks (+/- 2 Days)	P Value*
Pain in last 10 days	4.62 (1.88)	2.83 (2.26)	<0.001
Abdominal Pain	4.75 (2.46)	3.1 (2.65)	<0.001
Abdominal Distention	5.08 (2.14)	2.90 (2.4)	<0.001
Satisfaction Bowel Habit	5.48 (2.05)	3.21 (2.48)	<0.001
IBS affecting lifestyle	5.42 (1.8)	2.88 (2.49)	<0.001
Anxiety	4.88 (2.46)	2.06 (2.17)	<0.001
Sleep	5.19 (2.31)	2.12 (2.18)	<0.001

*P Value calculated by using a Paired t-test to compare before treatment and after 4-weeks treatment VAS (0-10) score at 5% level of significance

Table 4 Liver Function Test

	Mean (SD)		P Value
	Before Treatment	After Treatment	
SGPT	21.94 (5.2)	22.23 (5.01)	0.768165
SGOT	18.96 (3.97)	20.17 (4.07)	0.097101
Bilirubin-Total	0.79 (0.1)	0.8 (0.23)	0.812389
Bilirubin-Direct	0.19 (0.05)	0.2 (0.06)	0.243019
Bilirubin-Indirect	0.51 (0.22)	0.47 (0.2)	0.365151
Alkaline Phosphatase	197.14 (16.14)	195.15 (21.45)	0.631142

4. Discussion

Irritable bowel syndrome symptoms include abdominal pain, constipation, diarrhea or a combination of these, mucus discharge with faeces and changes in the consistency of the stools [30]. It can be identified using the Rome IV criteria, which were developed by consensus among a global group of specialists in the study of disorders of gut-brain interaction [31]. Utilizing medicinal plants to treat or prevent clinical problems is a type of therapy known as herbal medicine [19,32,33]. Despite the range of therapeutic options available, management of IBS remains a challenge. Many medications that have been found to be beneficial in the management of IBS only yield minor therapeutic advantages. Most patients with these medications do not see a significant improvement in their IBS symptoms or quality of life [34]. Many IBS sufferers have chosen to explore complementary and alternative medicines (CAM) due to unsatisfactory outcomes with pharmaceutical medications, worries about their potential adverse effects and being motivated by a desire to use something natural [35].

Study results show that 67.30% were found to be affected more. However, a systematic review and meta-analysis from 55 studies reported high prevalence (14.0% vs 8.9%; OR, 1.67; 95% CI, 1.53–1.82) in women [36]. The age group most affected in this study was in the range of 20 years to 30 (23.1%) years and 50 years to 60 years (23.1%). Adolescents were mostly affected with IBS as per large data evaluated in a meta-analysis and most patients were found in the age group of 40 years-49 years [5]. Symptoms related to pain and improvements were analyzed by VAS score in this study. Some studies have proved the importance of the VAS score in measuring the treatment outcomes by means of the response to symptoms and well-being. Analysis using VAS score is considered as a reliable and user-friendly tool in this study [37]. In this study, mainly abdominal pain, abdominal distension, satisfaction with bowel habits, IBS affecting lifestyle, anxiety and sleep were analyzed using the VAS IBS score. The effect of Kava kava (*Piper methysticum*) on anxiety and sleep is mainly analyzed in this study. It was found that along with other symptoms anxiety and sleep were significantly improved after treatment. In Previous studies, Kava kava was considered as an effective treatment for insomnia [38,39,22]. Also, some studies have considered Kava kava an anxiolytic drug of inebrant and modern clinical

use [23]. Six studies reported that the Kava kava mono preparation is effective in the reduction of anxiety [40]. Similar results were found in this study, where no significant harm was observed in any of the enrolled participants. This study, while informative, utilized a relatively small sample size of patients. Expanding the scope with a larger sample size, focusing on similar objectives and patient populations, is encouraged as it has the potential to yield more robust and definitive evidence regarding the effectiveness of Kava-kava.

5. Conclusion

In conclusion, this study advises the use of Kava kava Ext. (*Piper methysticum*) in IBS. The study also recommends to use the Kava kava Ext. (*Piper methysticum*), prescribed in doses of 500 mg or purified kavalactones in dose up to 250 mg by medical professionals for a shorter duration of time.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare there is no conflict of interest in this study.

Statement of ethical approval

The study was conducted only after getting approval from a Healing Hands Independent Ethics Committee.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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