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STUDY OF BIOCHEMICAL PROFILE IN IRRITABLE BOWEL SYNDROME (IBS) ON TREATMENT WITH BILVA (AEGLE MARMELOS (L.)

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ABSTRACT **Introduction:** Irritable Bowel Syndrome (IBS) is a group of intestinal symptoms which lasts at least three months for at least three days per month. The symptoms of IBS typically include cramping, abdominal pain, bloating and gas, constipation, diarrhoea. IBS also affects other organs like liver, kidney, pancreas also. BILVA is considered to have antioxidant, anti-inflammatory, immunomodulator, soothing and lubricating influence on the body. In the present study, effect of Bilva on biochemical parameters in patients of irritable bowel syndrome (IBS) have been studied. **Aim & Objectives:** Biochemical evaluation of irritable bowel syndrome patients before & after Bilva treatment. **Material And Methods:** 30 diagnosed patients of irritable bowel syndrome were tested for biochemical parameters including liver function test (LFT), renal function test (RFT), serum electrolytes, amylase, uric acid and minerals (Calcium, phosphorus). All patients were treated with Bilva (Formulation prepared by ayurvedic medical college & hospital) at dosage of 3 gms BD for 2 months. Biochemical evaluation was repeated 15 days after the last dose of Bilva. **Results:** Results obtained were statistically analysed by using paired t test. Post treatment analysis of samples showed significant ($p<0.05$) decrease in levels of Total bilirubin, ALT, BUN, uric acid, Creatinine, & significant ($p>0.05$) increase in levels of total protein, albumin, calcium, sodium, potassium & phosphorus. **Conclusion:** It can be concluded that BILVA treatment has beneficial effect on the patients of irritable bowel syndrome & should be included as a routine treatment in management of such patients.

KEYWORDS :

INTRODUCTION:

IBS is also known as spastic colon, irritable colon, mucous colitis, and spastic colitis. It is a separate condition from inflammatory bowel disease and isn't related to other bowel conditions. IBS is a group of intestinal symptoms like cramping, abdominal pain, bloating and gas, constipation, diarrhoea that typically occur together. The symptoms vary in severity and duration from person to person. However, they last at least three months for at least three days per month. IBS can cause intestinal damage in some cases. However, that is not common.

Based on these studies, the reported prevalence of IBS varies from 4.2%-7.5% in India. The condition affects more women than men. Some people with IBS have minor symptoms but others have significant symptoms and disrupt daily life.[1,2]

IBS can be diagnosed by symptoms such as any food allergies or tests like stool sample examined to rule out infection, blood tests done to check for anemia and rule out celiac disease and lastly perform a colonoscopy if the symptoms are being caused by colitis, inflammatory bowel disease (Crohn's disease), or cancer. The exact cause of IBS is unknown. [3,4]

BILVA:

Aegle marmelos (L.) Correa is a member of Dasha Moola (10 root drugs) group. The plant grows wild in dryforest in outer Himalayas and Shivalik's. Bilva is a medium to large sized deciduous glabrous armed tree with axillary and 2.5 cm long alternate trifoliate leaves, short flowers and has globular fruit.

While its fruits and leaves are used in Ayurveda for specific indications, the roots/root bark are specifically suggested for use in anti-inflammatory combination of Dasha Moola. The crude extracts of Bilva are reported widely to act as anti-diabetic[5,6], anti-inflammatory and analgesic[7], antiulcer, anti-microbial[8], antihyperglycemic and anti dyslipidemic[9], antidiarrheal[10], oral hypoglycaemic[11] antifungal[12],gastric mucosal protective, antioxidant [13], anticancer [14], antiviral [15,16], cardioprotective[17], antiasthmatic [18,19]agents.

Therefore, the present study is designed to carry out biochemical evaluation in these patients before & after treatment with Bilva.

Aim & Objectives: -

1. Biochemical evaluation of irritable bowel syndrome (IBS) patients before & after Bilva treatment.
2. To find out improvement in clinical and biochemical parameters after treatment with Bilva.
3. To conclude utility of Bilva in management of irritable bowel syndrome (IBS).

MATERIAL AND METHODS:-

30 diagnosed patients of irritable bowel syndrome were tested for biochemical parameters including liver function test (LFT), renal function test (RFT), serum electrolytes, uric acid and minerals (Calcium, phosphorus).

Sample Collection Before & After Treatment With Bilva:

Serum levels of Total Bilirubin by Modified Diazo [20] , ALT by Modified IFCC[22], , Blood urea Nitrogen by UV-GLDH[21], Uric acid by Uricase Creatinine by Modified Jaffe's[21], Total Protein by Biuret[21], Albumin by Bromocresol green[21], Calcium by Arsenazo, Sodium by Indirect ISE[23], Potassium by Indirect ISE[23],Phosphorus by Phosphomolybdate[24]method. All patients were treated with BILVA (Formulation prepared by ayurvedic medical college & hospital at dosage of 3 gms BD with warm water on empty stomach in the morning for 2 months. Biochemical evaluation were repeated 15 days after the last dose of BILVA.

Inclusion Criteria:

1. Patients with classical symptoms of irritable bowel syndrome
2. Patient's age 18 to 60 years.
3. Patients who have signed written & informed consent.

Exclusive Criteria:

- Patients with known history of abdominal Tuberculosis, Ca. stomach, gastric ulcer,
- Patients undergoing for treatment of any other major illness.
- Patients with acute symptoms of GI disorder
- Pregnant or lactating women or those who are not following contraceptive measures.

Methodology:- Case- control study

Statistical Analysis: By using paired t test

RESULTS: -

Table 2:-Comparison Of Early Irritable Bowel Syndrome Patients Before And After Treatment With BILVA

S. No	Parameter	Before treatment	After Treatment	P value	Significant /NS
1	Total Bilirubin	0.5±0.1	0.2±0.1	p<0.05	Significant
2	ALT	60.7±1.2	30.2±0.9	p<0.05	Significant
3	BUN	25.3±1.2	21.1±1.9	p<0.05	Significant
4	Creatinine	1.0±0.1	0.7±0.2	p<0.05	Significant
5	T. Protein	4.3±0.8	6.7±0.4	p<0.05	Significant
6	Albumin	3.1±0.4	4.5±0.1	p<0.05	Significant
7	Sodium	91.2±11.4	139.4±2.0	p<0.05	Significant
8	Potassium	2.3±0.4	4.1±0.2	p<0.05	Significant
9	Calcium	7.4±1.1	8.5±3.3	p<0.05	Significant
10	Phosphorus	1.9±0.5	3.5±0.6	p<0.05	Significant

Table 2 shows that Post treatment analysis of samples showed significant (p<0.05) decrease in Total Bilirubin (0.5±0.1 to 0.2±0.1), ALT (60.7±1.2 to 30.2±0.9), BUN (25.3±1.2 to 21.1±1.9), Creatinine (1.0±0.1 to 0.7±0.2), increase in Total Protein (4.3±0.8 to 6.7±0.4), Albumin (3.1±0.4 to 4.5±0.1), Sodium (91.2±11.4 to 139.4±2.0) , Potassium (2.3±0.4 to 4.1±0.2), Calcium (7.4±1.1 to 8.5±3.3) ,Phosphorus (1.9±0.5 to 3.5±0.6).

DISCUSSION:-

The present study revealed significant (p<0.05) increase in the levels of Total Protein, Albumin, Sodium, Potassium, Calcium, Phosphorus. Fiderkiewicz et al studied that A consistent trend of a higher prevalence of IBS compatible symptoms with lower potassium concentration, also suggests a causative role for hypokalemia. which originates from the extracellular and the remainder from the intracellular space. [25,26]

Seung-Hwa Compared patients with IBS with control subjects, showed significantly higher values of anthropometric parameters (body mass index, waist circumference), liver enzymes, γ-GT, and lipid levels. The prevalences of elevated ALT (16.9% vs. 7.7%; p=0.015) and γ-GT (24.1% vs. 11.5%; p=0.037) levels were significantly higher in patients with IBS than in control subjects.[27]

Oikonomou et al concluded that in IBS patients , acute renal failure can be suspected on the basis of a decreased urinary output and elevation in serum creatinine and/or blood nitrogen levels.[28]

Recent studies demonstrate the curative effects of the ethanolic extract of Bilva plants against 2,4,6-trinitrobenzene sulfonic acid (TNBS) induced colitis in rats through its anti-bacterial and anti-oxidant [29] properties. Thus, there is extensive data on the use of leaves, bark, roots, fruits and seeds of Bilva in Ayurveda for prevention and treatment of variety of inflammatory diseases.

The anti-inflammatory effect of aqueous extracts of Bilva root have been studied on rats which might be due to the additive effects of the chemical constituents present in the aqueous extract of Bilva root. Marmin, marmesin, umbelliferine and skimmianine have been identified in the bark and roots of Bilva which were found to contribute to the anti-inflammatory property of Bilva [30-32].

CONCLUSION:

From this study it can be concluded that BILVA being having anti-inflammatory , analgesic & antidiarrheal properties may prevent inflammation & loss of nutritive substances such as proteins, albumin & minerals in IBS patients . Thus, BILVA treatment has beneficial effect on the patients of early IBS patients & should be included as a routine treatment in management of such patients.

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