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Research Article

Symbiotic Treatment Improve IBS Symptoms and Quality of Life: Placebo-Controlled Study

Bazzi Nagham[1], Bazzi Mariam[2], Hallal Hadi[1], Lakkis Remie[1], Akoush Hassan[1], Saad Wajih[1], AlKhatib Amani[1] and Hallal Mahmoud[3]*

[1]Faculty of Medicine, Lebanese University, Beirut, Lebanon

[2]Faculty of Pharmacy, Lebanese International University and Faculty of Public Health, Saint Joseph University and Faculty of Medicine, Lebanese University, Beirut, Lebanon

[3]Assistant Professor of Medicine, Faculty of Medicine Sciences, Lebanese University and Department of Gastroenterology, Al Zahraa Hospital University Medical Center, Beirut, Lebanon

***Corresponding Author:** Hallal Mahmoud, Assistant Professor of Medicine, Faculty of Medicine Sciences, Lebanese University and Department of Gastroenterology, Al Zahraa Hospital University Medical Center, Beirut, Lebanon.

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Abstract

Background: Irritable bowel syndrome (IBS) is a chronic and functional gastrointestinal dysfunction characterized by altered bowel movement and abdominal pain and has a complicated etiology. Probiotics are the novel therapy based on better understanding of the disease pathology.

Patients and Methods: We conducted a control-placebo study, 157 subjects enrolled in this study, and followed up for 6 months, divided into three groups to compare the effect of probiotics and placebo on IBS patients.

Results: Probiotics significantly decreased the IBS symptoms, it normalized bowel movement.

Conclusion: Probiotics could be the gold standard for IBS treatment.

Keywords: Irritable Bowel Syndrome; Probiotics; Constipation and Diarrhea

Introduction

Irritable bowel syndrome (IBS) is a chronic and functional gastrointestinal dysfunction characterized by altered bowel movement and abdominal pain and has a complicated etiology [1,2]. Prevalence of IBS is estimated between 5 - 11% in North America and 11.4% in Saudi Arabia, however there are scarce data on the prevalence of IBS in Middle EAST [3]. IBS age of onset is at 20 to 39 years age old [3]. Female sex, food intolerance, stress, psychological problems are risks factors [4]. Nuances of clinical presentation are abdominal pain or discomfort, stool pattern alteration, bowel distension, bloating, and urgency [5]. The IBS can be classed into three groups: IBS-D (diarrhea dominant), IBS-C (constipation dominant), and IBS-M (mixed bowel patterns) [4]. The disorder can be psychologically devastating and depressing [6]. Anxiety and depression are three times more common in IBS patients compared to healthy patients [7]. It is also challenged by increasing socioeconomic costs due to earlier age risk [5].

Nowadays, there has been heightened interest in using symbiotic combinations as a treatment modality for IBS. The latter refers to a new term that represents the association between combinations of a probiotic and prebiotic [8]. These microorganism are capable of relieving IBS symptoms and hold a promise of new therapeutic strategy [5]. They were initially described in 1908 by

ElieMetchinkoff who noticed the beneficial effect of fermented food on human health [9]. The symbiotic microorganism have been proved to prevent pathogenic bacteria growth and host invasion, improve abdominal pain in animals as well as amelioration of IBS symptoms [9].

Aim of the Study

The aim of this clinical trial was to evaluate the effectiveness of a symbiotic product, *Lactobacillus acidophilus* + *Lactobacillus Bifidus* + sunfiber (Vita Colon Relief®) for IBS-related symptoms, in the improvement of IBS symptoms: abdominal pain score, bloating score, Quality of Life (QOL) score, and number of bowel movement in healthy, IBS-C, IBS-D and IBS-M patients.

Methods

This is a prospective, randomised, placebo-controlled study.

The protocol was approved by an independent IRB obtained from a hospital University.

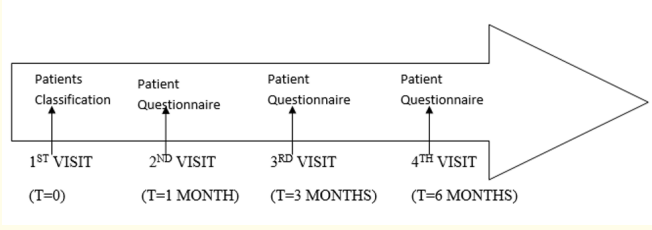
Subjects aged 18 years or older were recruited in the study. Included subjects had to meet the Rome IV criteria for IBS [10]. This criteria include presence of recurrent abdominal pain or discomfort at least 1 day/week in the last 3 months, associated with 2 or more of the following: related to defecation defecation, onset associated with a change in frequency of stool, and onset associated with a change in form (appearance) of stool. This criteria is fulfilled with symptoms lasting for 6 months [10], 157 subjects were enrolled and classed into three groups:

1. Group 1 patients taking Vita Colon Relief®
2. Group 2 patient taking Vita Colon Relief® + other drug (not related to colon disease)
3. Group 3 patient taking placebo (control).

The Vita Colon Relief® consists of a smooth tablet containing: 28.056 mg *Lactobacillus acidophilus*, *Lactobacillus bifidus* (33.4 mg), and Sunfiber® (500 mg).

Subjects returned to the clinic at 1 month, 3 months and at 6 months to answer a clinical hard copy survey which consists of a Numeric Pain Scale to assess:

- Abdominal pain (0: no pain, 1 - 3: mild pain, 4 - 6: moderate pain, 7 - 10: severe pain)
- Bloating score with 5 answer options graded from 1 to 5,
- Quality of life improvement with 4 answer options: 25%, 50%, 75% and 100%,
- An open question about the number of bowel movement per week including number of diarrhea or constipation per week [11].



Figure

Results

Study endpoints

Study endpoints include change in abdominal pain score, bloating and distension score, quality of life improvement, change in bowel movement and frequency of stool per week. Safety endpoints were the severity and exacerbation of IBS. Patients having severe adverse events were excluded.

Data management

Data were collected on hard-copy surveys in the clinic and then entered into excel program. Data were analyzed using SPSS program and inter-group variation were assessed.

Demographics and baseline subject characteristics

The distribution of demographic and baseline characteristics of the population are presented in table 1. The three groups are comparable in age and sex. The most common chief complaint in all groups was abdominal pain. The second most common symptom was abdominal distention and bloating in group 1, abdominal bloating in group 2 and abdominal distention in group 3.

Distribution of irritable bowel syndrome subtypes

Among the 157 patients, 109 were classified by the investigators as IBS-C, IBS-D, or IBS-M based on their symptoms and history at study entry. The distribution of subjects in the three subtypes was presented in table 1. In the three groups the most common subtype was IBS-M.

Abdominal pain score

A significant difference was noted on visit 3 (at 4 months) in abdominal pain score between the three groups. At the 4th visit (longest follow up, 6 months), most patients (46.2%) in group 1 had

		Vita Colon	Vita Colon+ Other Drug	Placebo	Significant
Total (n)		54	54	49	
Age (years)	Mean	44.2	43.46	45.45	0.881 (NS)
	Standard deviation	13.331	13.212	49	
SEX (#, %)	Male	23 (42.3%)	22 (40.7%)	16 (32.6%)	0.551 (NS)
	Female	31 (57%)	32 (59.2%)	33 (67.3%)	
Chief complaint (#, %)	Abdominal pain	23 (42%)	34 (62.9%)	21 (42.8%)	0.007
	Abdominal bloating	13 (24%)	13 (29.6%)	7 (14.2%)	
	Flatulence	8 (14.8%)	2 (3.7%)	9 (18.3%)	
	Diarrhea	8 (14.8%)	9 (16.6%)	1 (2%)	
	constipation	8 (14.8%)	13 (24%)	9 (18.3%)	
	distention	13 (24%)	14 (25.9%)	19 (38.7%)	
IBS type (#, %)	IBS-C	6 (11%)	12 (22.2%)	0	0.000
	IBS-D	4 (7.4%)	1 (1%)	0	
	IBS-M	27 (50%)	18 (33.3%)	41 (83.6%)	

Table 1: Patients description.

NS: not significant: $p > 0.05$.

no abdominal pain versus only 11.1% in visit 1 and none scored more than 3 in abdominal pain score during the third and fourth visit. However 9.2% in group 2 and 2 % in group 3 (placebo) scored between 4 and 6 in the third visit and 7.4% in group 2 and 2% in group 3 (placebo) scored between 4 and 6 in the fourth visit.

			Vita Colon	Vita Colon+ Other Drug	Placebo	Significant?
Abdominal Pain score	V1	0	6 (11.1%)	5 (9.2%)	0 (0%)	0.043 (NS)
		1 - 3	17 (31.5%)	8 (14.8%)	10 (20.4%)	
		4 - 6	28 (51.8%)	34 (62.9%)	37 (75.5%)	
		7 - 10	3 (5.5%)	7 (12.9%)	2 (4%)	
	V2	0	9 (16.6%)	15 (27.7%)	1 (2%)	0.006
		1 - 3	38 (70.3%)	30 (55.5%)	42 (85.7%)	
		4 - 6	7 (12.9%)	9 (16.6%)	6 (12.2%)	
		7 - 10	0	0	0	
	V3	0	24 (44.4%)	32 (59.2%)	20 (40.8%)	0.032
		1 - 3	30 (55.5%)	17 (31.5%)	28 (57.1%)	
		4 - 6	0	5 (9.2%)	1 (2%)	
		7 - 10	0	0	0	
	V4	0	25 (46.2%)	30 (55.5%)	29 (59.1%)	0.078 (NS)
		1 - 3	24 (44.44%)	13 (24.0%)	17 (34.6%)	
		4 - 6	0	4 (7.4%)	1 (2%)	
		7 - 10	0	0	0	

Table 2: Abdominal pain score.

NS: Not Significant: $p > 0.05$.

Bloating score

During the four visits, no significant difference were seen between the three groups. In the Vita Colon Relief® group, no bloating score of 4 was detected in the third visit or fourth visit, versus 7.4% in the first and second visit. However, in the second group, 5.5% (n = 3) had a bloating score of 4 in the fourth visit and 4% (n = 2) in the placebo group.

			Vita Colon	Vita Colon+ Other Drug	Placebo	Significant?
Bloating score	V1	1	1 (1.8%)	5 (9.2%)	2 (4%)	0.2 (NS)
		2	19 (35.15%)	15 (27.7%)	19 (38.7%)	
		3	30 (55.5%)	23 (42.5%)	22 (34.8%)	
		4	4 (7.4%)	11 (20.3%)	6 (12.2%)	
	V2	1	3 (5.5%)	7 (12.9%)	3 (6.1%)	0.548 (NS)
		2	23 (42.5%)	23 (42.5%)	23 (46.9%)	
		3	24 (44.4%)	18 (33.3%)	21 (42.8%)	
		4	4 (7.4%)	6 (11.1%)	2 (4%)	
	V3	1	16 (24%)	20 (37%)	15 (30.6%)	0.625 (NS)
		2	33 (51.1%)	25 (46.2%)	29 (59.1%)	
		3	5 (9.2%)	7 (12.9%)	4 (8.1%)	
		4	0	2 (3.7%)	1 (2%)	
	V4	1	23 (42.5%)	27 (50%)	17 (34.6%)	0.238 (NS)
		2	23 (42.5%)	21 (38.8%)	26 (53%)	
		3	8 (14.8%)	3 (5.5%)	4 (8.1%)	
		4	0	3 (5.5%)	2 (4%)	

Table 3: Bloating score.

NS: Not Significant: p > 0.05.

Quality of life (QOL) improvement

A significant difference was noted between the three groups in the fourth visit regarding the QOL improvement. A 100% improvement was seen in 18.5% (n = 10) in the 1st group, versus 11% (n = 6) and 2% (n = 1) in the second and third groups respectively.

			Vita Colon	Vita Colon+ Other Drug	Placebo	Significant?
QOL Improvement	V1	25%	33 (61.1%)	32 (59.3%)	28 (57.1%)	0.161 (NS)
		50%	18 (33.3%)	15 (27.8%)	21 (42.9%)	
		75%	2 (3.7%)	3 (5.5%)	0	
	V2	25%	11 (20.4%)	10 (18.5%)	2 (4%)	0.181 (NS)
		50%	32 (59.3%)	31 (57.4%)	35 (71.4%)	
		75%	10 (18.5%)	13 (24.0%)	12 (24.4%)	
		100%	1 (1.9%)	0	0	
	V3	25%	1 (1.9%)	3 (5.5%)	0	0.219 (NS)
		50%	17 (31.5%)	13 (24.1%)	13 (26.5%)	
		75%	30 (55.6%)	35 (64.8%)	35 (71.4%)	
		100%	6 (11.1%)	3 (5.5%)	1 (2%)	
	V4	25%	1 (1.9%)	5 (9.2%)	0	0.029
		50%	8 (14.8%)	7 (12.9%)	6 (12.2%)	
		75%	35 (64.8%)	35 (64.8%)	42 (85.7%)	
		100%	10 (18.5%)	6 (11.1%)	1 (2%)	

Table 4: QOL improvement.

NS: Not Significant: p > 0.05.

Number of bowel movement (BM)

No significant difference was seen in the fourth visit and the majority of patients in the three groups had 3 - 7 BM per week.

An improvement of the number of BM was seen in the first group between first visit where 64.8% had normal BM (score between 3 - 7) versus 94.4% in the fourth visit.

			Vita Colon	Vita Colon+ Other Drug	Placebo	Significant?
Number of bowel mvt	V1	< 3	16 (29.6%)	22 (40.7%)	21 (42.8%)	0.483 (NS)
		3 - 7	35 (64.8%)	30 (55.6%)	24 (48.9%)	
		> 7	3 (5.5%)	2 (3.7%)	4 (8.1%)	
	V2	< 3	28 (51.9%)	20 (37%)	26 (53%)	0.184 (NS)
		3 - 7	26 (48.1%)	34 (62.9%)	23 (46.9%)	
		> 7	0	0	0	
	V3	< 3	31 (57.4%)	16 (24%)	28 (57.1%)	0.004
		3 - 7	23 (42.6%)	38 (70.3%)	21 (48.9%)	
		> 7	0	0	0	
	V4	< 3	2 (3.7%)	4 (7.4%)	2 (4.0%)	0.59 (NS)
		3 - 7	51 (94.4%)	50 (92.5%)	47 (95.9%)	
		> 7	1 (1.9%)	0	0	

Table 5: Number of bowel movement.

NS: Not Significant: $p > 0.05$.

Discussion

The IBS is a multifactorial disease with many therapeutic options. It is mainly geared towards IBS type: diarrhea, constipation or mixed. Various pain reliever are available such as: antispasmodics, peppermint oil, selective serotonin reuptake inhibitors (SSRIs), and tricyclic antidepressants [11,12]. Patient education and reassurance as to the benign natural history is the key for treatment [12].

In this study, most patients were females which is similar to other studies [13]. Patients with IBS present recurrent pain or discomfort for at least 3 days per month and two of the following features: amelioration with defection, change in stool consistency or frequency [14].

In our study, patients in all groups had mostly abdominal pain followed by abdominal bloating and flatulence and diarrhea.

Although we tried to randomize patients as much as possible, there was a statistical significant difference between types of IBS.

In a clinical trial assessing the efficacy of probiotics versus placebo groups, the probiotic group had a significantly lower abdominal pain score but no improvement in abdominal bloating sensation [15]. This was seen in our study at 4 months where the abdominal pain score decreased significantly in symbiotic group.

The improvement of the bloating score in the three groups was not significantly different. However, in the Vita Colon Relief® group, 1.8% of patients had scored 1 in bloating score and this number increased to 42.5% in the fourth visit (at 6 moths). Fifteen studies of 12 different probiotics evaluated the improvement of bloating/distention in patients with IBS [16]. Seven studies proved statistically beneficial effect in patients treated with specific probiotics compared to placebo group [16].

The health related quality of life has been evaluated in two studies assessing the effect of fermented milk on patients with IBS [17,18]. In both studies, the fermented milk showed beneficial effect on quality of life. The latter has significantly increased after 4 weeks in patients receiving probiotics compared to placebo [18]. Similarly, for the second article, the quality of life improved after 3 - 6 weeks but the results didn't differ between placebo and probiotics groups [17]. In our study, the quality of life improved in both groups and was significantly higher in probiotics group.

Four studies assessed bowel habit and stool frequency [19-22]. No statistically significant difference was seen between symbiotic

and placebo groups in all types of IBS [19-22]. However, this was in opposition to our study results, where a statistically significant difference was seen between the 3 groups and an improvement in stool frequency in symbiotic group.

Conclusion

In the light of current knowledge, symbiotic seems to be an efficient and tolerable treatment for IBS. It proved an ability to improve 100% the quality of life, cause an important decrease in abdominal pain score and bloating score. However, additional standardization of treatment dosing-protocols and further randomized clinical trials are needed to establish a consensus about the use of probiotics in IBS. Despite needed research, IBS symbiotic appears as a potential treatment that ease IBS symptoms.

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