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ISPAGHULA HUSK: A COMMON THERAPEUTIC AGENT FOR HYPER-CHOLESTEROLEMIA

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ABSTRACT

Ispaghula husk belongs to the family Plantaginaceae. In Urdu it is called ispaghul, in English it is called Spogel, parts used are seeds and husk, it is mucilaginous, laxative, cooling, demulcent, emollient, it is used in the treatment of chronic constipation, amoebic and bacillary dysentery and diarrhoea due to irritab1e conditions of gastrointestinal tract. It also decreases serum cholesterol. It has been tried in various conditions as chronic constipation, irritable bowel, azotemia, electrolytes and bowel regulations in patients, has been tried in patients with haemorrhoids, in ulcerative colitis. It has been claimed to decrease serum cholesterol.

It was tried in hypercholesterolemia, for this purpose patients who had increased serum cholesterol level were selected both male and female from the age of 40-70 years. Males were labeled as A_1, A_2, A_3 and females were labeled as B_1, B_2, B_3 groups. In all the groups serum cholesterol level was estimated before the start of treatment and Ispaghula husk was given once daily in the dose of 5 G with a glass of water the serum cholesterol was again estimated at the end of six weeks in all the patients who completed six weeks period. In each group ten patients were placed and there were thirty males and thirty females. After investigation of the serum cholesterol it was concluded that serum cholesterol decreased in all groups showing $P<0.05$. It can be concluded that this study determines that Ispaghula husk has the capability of decreasing serum cholesterol level. The results are comparable with studies performed by other investigators.

The patients who were kept on Ispaghula husk improved their bowel habits. The same is also comparable with other studies highlighting this quality of Ispaghula husk.

INTRODUCTION

Ispaghula belongs to family plant aginaceae. In Urdu it is called Isapghul. In English it is called Spogel, parts used are seeds and husk.

Functions and actions

The functions and actions as described by Khan *et al*. (1997), it is mucilaginous, laxative, cooling, demulcent, emollient, some microstatic effects on intestinal micro-organisms are also attributed to the seeds and husk. As simple decoction of seeds and husk are mild astringent. They are also lubricating, resolvent and anti-inflammatory.

Medicinal uses

The main use of ispaghula husk is in the treatment of chronic constipation; amoebic and bacillary dysentery and diarrhoea due to irritable conditions of gastrointestinal tract. Crushed seeds are made into poultice applied to rheumatic and glandular swellings. It relieves constipation mechanically by forming bland mucilage which possess the mucilaginous properties, therefore during its passage through intestine, exerts soothing and protective action as demulcent, emollient and lubricant. It also decreases cholesterol.

Ispaghula husk has been used for a long time for bowel movements, for constipation

and indigestion. As studied by Davies *et al*. (1998). It was found to relive the symptoms of constipation. According to study on seventy five patients suffering from chronic constipation, after four weeks treatment with Ispaghula husk, frequency, stool consistency, abdominal pain and signs of venous stasis improved and after treatment no important side effect was recorded. Cholesterol HDL, and triglycerides did not show significant changes (Borgia *et al*., 1983). According to the study performed by Dettmar and Sykes (1998) Ispaghula husk produced a higher percentage of normal well formed stools and fever hard stools as compared with other laxatives like lactulose. In group receiving ispaghula husk the incidence for soiling, diarrhea and abdominal pain were lower.

According to a study of mebeverine/ ispaghula combination and mebeverine dietary advice group. It was concluded that both treatment were effective in the treatment of irritable bowel syndrome in adults (Chapman *et al*., 1990).

According to a study the treatment of irritable bowel syndrome with Ispaghula husk and propanthelin was effective both in relieving symptoms and maintenance of remission (Misra *et al*., 1989). Treatment of chronic diarrhoea was done with loperamide versus ispaghula husk and calcium. It was concluded that combination of ispaghula and calcium seemed to be a cheap and effective alternative to conventional treatment of chronic diarrhoea. Moreover side effects were minimized (Qvitzau *et al*., 1988). Studies signified that Ispaghula improved overall well being in patients with irritable bowel syndrome and in those with constipation favourably affects bowel habit and transit time (Prior and Whorwell, 1987). In treatment of irritable bowel syndrome according to studies by Ritchic and Truclove (1979), the therapeutic results were not promising but ispaghula husk used for irritable bowel syndrome was effective. A fiber made psyllium husk was given to 12 elderly patients for 4 months to investigate their fecal output and selected serum parameters. Serum cholesterol was decreased by 20% while triglycerides remained unchanged. It was suggested that dietary fibre may have significant cholesterol lowering capacity due to binding of bile acids in the intestine (Burton and Manninen, 1982). According to a study in patients with haemorrhoids the bulk evacuant (Ispaghula husk) given to fifty-three patients, although 11% of the patients complained of constipation a significant benefit in symptoms and improved bowel habit was demonstrated in others (Webster, 1978). The efficacy of ispaghula husk in relieving gastrointestinal symptoms in patients with ulcerative colitis in remission was studied in a placebo-controlled trial. The results showed that ispaghula can be helpful in the management of gastrointestinal symptoms in quiescent ulcerative colitis (Hallert *et al*., 1991).

SUBJECTS AND METHODS

Grouping of the patients:

Males

A_1 age group 40-50 years
A_2 age group 51-60 years
A_3 age group 61-70 years

Females

B_1 age group 40-50 years
B_2 age group 51-60 years
B_3 age group 61-70 years

In each group there were ten patients.

The patients suffering from hypercholesterolemia were registered for this study. Serum cholesterol level was estimated before the start of the treatment and after six weeks. Ispaghula husk was given once daily in dose of 5G orally with a glass of water. The patients were instructed to continue the treatment for six weeks. The serum cholesterol was again estimated at the end of six weeks and comparison was noted.

RESULTS AND OBSERVATIONS

Table 1- Males:

In age group A_1 (40-50 years) serum cholesterol was measured and it was 243 ± 4.9

mg/dL before the start of the treatment and after treatment with Ispaghula husk it decreased to 228 ± 3.8 with P<0.05.

In age group A_2 (51-60 years) serum cholesterol was measured and it was 258±5.5 mg/dL before the start of the treatment and after treatment with Ispaghula husk it decreased to 248 ± 5.3 with P<0.05.

In age group A_3 (61-70 years), serum cholesterol was measured and it was 260 ± 2.7 mg/dL before the start of the treatment and after treatment with Ispaghula husk it decreased to 246 ± 5.2 with P<0.05.

In total number of patients i.e. 30, the calculation was done and before treatment it was found 254 ± 8.8 mg/dL and after treatment it decreased to 240 ± 10.1 with P<0.05.

Table 2 - Females:

In age group B_1 (40-50 years) serum cholesterol was measured and it was 257 ± 7.4 mg/dL before the start of the treatment and after treatment with Ispaghula husk it decreased to 242 ± 6.1 with P<0.05.

In age group B_2 (51-60 years) serum cholesterol was measured and it was 258 ± 5.2 mg/dL before the start of the treatment and after treatment with Ispaghula husk it decreased to 248±5.0 with P<0.05.

In age group B_3 (61-70 years), serum cholesterol was measured and it was 255±8.7 mg/dL before the start of the treatment and after treatment with Ispaghula husk it decreased to 247 ± 7.7 with P<0.05.

The calculation was done in total number of patients i.e. 30. The serum cholesterol was 255±9.4 mg/dL before the start of treatment and after treatment with Ispaghula husk it decreased to 244±7.8 with P<0.05.

Patients who we-re kept on Ispaghula husk have also improved their bowel habits (an additional benefit).

DISCUSSION

Lowering cholesterol levels by natural dietary modification is an attractive first line option for the treatment of mild to moderate hypercholesterolaemia. The addition of soluble fibers for example, psyllium to the modified diet has produced better results. In this study the cholesterol-level lowering effect of Ispaghula husk was compared before the start of the treatment and after completion of treatment for six weeks. Ispaghula treatment was given in the dose of 5G/day for six weeks.

Table-1

Effect of Ispaghula husk on serum cholesterol according to age in males (n=30)

Each Group (n=10)

Group	Age group (years)	n	Serum cholesterol mg/dL		
			Before treatment (Mean ± S.D.)	After 6 weeks treatment (Mean ± S.D.)	P-value
A_1	40-50	10	243 ± 4.9	228 ± 3.8	<0.05
A_2	51-60	10-	258 ± 5.5	248 ± 5.3	<0.05
A_3	61-70	10	260 ± 2.7	246 ± 5.2	<0.05
	Total	30	254 ± 8.8	240 ± 10.1	<0.05

Table-2
Effect of Ispaghula husk on serum cholesterol according to age in females (n=30)
Each Group (n=10)

Group	Age group (years)	n	Serum cholesterol mg/dL		
			Before treatment (Mean ± S.D.)	After 6 weeks treatment (Mean ± S.D.)	P-value
B_1	40-50	10	257 ± 7.4	242 ± 6.1	<0.05
B_2	51-60	10	258 ± 5.2	248 ± 5.0	<0.05
B_3	61-70	10	255 ± 8.7	247 ± 7.7	<0.05
	Total	30	255 ± 9.4	244 ± 7.8	<0.05

According to this study the serum cholesterol level in all groups of the patients fell down in males and also in females. Ispaghula produced reduction in serum cholesterol level with P<0.05. According to the studies performed by MacMahon and Charles (1998) similar observations have been made. According to the study performed by Davidson *et al* (1998), serum lipid profiles were assessed in a randomized, double-blind controlled study it was indicated potential for long-term benefit. The effects of psyllium husk fiber supplementation to the diets were studied and was concluded that reduction of serum cholesterol was due to reduction of LDL cholesterol. Psyllium fiber supplementation lowered serum cholesterol regardless of saturation level of dietary fat (Ganji and Kies 1996). Study was performed by Abraham and Mehta (1998) to determine the effect of psyllium husk on plasma total and lipoprotein cholesterol in healthy human subjects. Fecal steroid excretion, determined from 5 day collections was not affected by psyllium supplementation. Although psyllium tended to delay lipid absorption, plasma triglycerides, retinyl esters, glucsoe, insulin and glucagon quantitated during meal tolerance tests given on the last day of each diet period were not different. Thus, the cholesterol-lowering mechanism of psyllium may not involve increased bile acids excretion or decrease in nutrient absorption.

The patients who were given Ispaghula husk for hyperchoiesterolaemia proved their bowel habits improved this study correlates with the study performed by Borgia *et al* (1983), on seventy five patients affected by chronic constipation, frequency, stool consistency, abdominal pain and signs of venous stasis improved after treatment. Ispaghula husk improved the bowel habits in haemorrhoidal patients, it clarifies the efficacy of Ispaghula husk in constipation (Webster *et al*., 1978).

From this study it could be concluded that Ispaghula husk has got the efficacy to decrease serum cholesterol and it also improves the bowel habits as well as it is better remedy for constipation.

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