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ORIGINAL ARTICLE

Saccharomyces Boulardii Vs. Yogurt Fluid for Acute Diarrhoea: A Clinical Efficacy Comparison

SAIMA TABASSUM[1], HAFIZ HASEEB HANIF[2], SOHAIB RIAZ[3], NABEEL AHMED[4], MUHAMMAD AHSAN[5]
[1]*Associate Professor Physiology, Niazi Medical & Dental College Sargodha*
[2]*Senior Registrar Pediatrics, Ali Fatima Hospital/ Abu Ummara Medical / Dental College*
[3]*Assistant Professor, Pediatrics, Madinah Teaching Hospital, Faisalabad*
[4]*Medical Officer, Jinnah Hospital, Lahore*
[5]*Medical Officer, Pediatrics, General Hospital, Faisalabad*
Corresponding author: Sohaib Riaz, Email: drsohaib208@gmail.com

ABSTRACT

Objective: To compare clinical efficacy of Saccharomyces Boulardii vs. Yogurt Fluid for acute diarrhoea.

Methodology: We enrolled 100 cases of acute non-bloody diarrhoea (regardless of gender) between 6 months and 2 years of age in which the duration of diarrhoea was less than 14 days from Madinah teaching hospital, Faisalabad during March till September, 2022. Cases were randomly classified into (A) and (B). Group A received Saccharomyces boulardii (250mg BD for five days) whereas Group B received yoghurt fluid (15 mL twice a day for toddlers 2 years and 30 mL twice a day for children 2 years). Both groups were rehydrated and fed. Clinical effectiveness was 3 stools or fewer each day till day 5.

Results: In our study, mean age in Group A was 12.36+4.35 months and in Group B 12.96+5.12 months, p-value=0.529, mean No. of stools before treatment was 7.36+1.21 in Group A and 7.50+1.22 in Group B, p-value=0.565, which reduced to 4.38+1.37 in Group A and 5.24+1.00 in Group B, p-value=0.001. Gender distribution shows that male were 57(57%) and 43(43%) were females. Comparison of clinical efficacy shows that 32(64%) in Group A and 21(42%) in Group-B, p-value=0.022 showing a significant difference.

Conclusion: We found that Saccharomyces Boulardi had a much better clinical effectiveness than yoghurt fluid in treating acute diarrhoea in children without blood.

Keywords: Children, acute diarrhoea, Saccharomyces Boulardii, Yogurt Fluid, clinical efficacy

INTRODUCTION

The World Health Organization (WHO) defines diarrhoea as three or more loose or watery stools passed during a period of 24 hours, as well as a rise in the frequency of stools. [1] Children under the age of five are particularly vulnerable, as it is the second leading cause of death worldwide. Each year, more than 750,000 children under the age of five die from it, mostly in developing nations. 1 The World Health Organization recommends treating episodes of acute watery diarrhoea with a combination of oral rehydration salt (ORS), prolonged nutritional eating, and zinc.[2] 1.8 million deaths per year is seen with diarrhea.[3] 200,000 deaths per year is seen in Pakistan due to diarrhea.[4] Although there are many causes but Rotavirus, E.Coli and V.cholerae are amongst the commonly seen causes in our country.[5]

Oral rehydration solution is used to treat acute diarrhoea by restoring fluid, carbohydrates, and electrolytes lost during vomiting and/or diarrhoea. Unfortunately, this treatment does little to lessen the intensity or length of diarrhoea.[6] Finding a safe and effective medication to shorten the length of a diarrhoea episode has remained a priority. The studies have demonstrated that probiotics aid in the speedy recovery from severe diarrhoea. Yoghurt (also spelled yoghourt, youghurt, and yogourt) is a fermented milk product. Yogurt gets its texture and signature tang from lactic acid, which is produced during the fermentation of the milk sugar (lactose). Soy milk is used to create a dairy-free yoghurt replacement known as "soy yoghurt." It's a good source of protein, calcium, riboflavin, vitamins B6 and B12, and other essential nutrients. Commercially available yoghurt in our country is known as curd, or more popularly by the native word "dahi".[7]

In the form of dietary supplements, probiotics provide the health benefits of bacteria and yeast. Probiotics are defined as "Live Micro-organism which when provided in suitable quantity exerts a health benefit on the host"[8] by the Food and Agriculture Organization and the World Health Organization. There have been a lot of research done on probiotics and yoghurt (curd) for treating and preventing acute diarrhoea in children, and the results of the vast majority of these studies demonstrate that both are useful. So far as we are aware, there is no research in India comparing the effectiveness and cost of using probiotics to conventional yoghurt for the treatment of diarrhoea. This was a primary consideration in the design of our investigation.

The probiotic bacteria Saccharomyces boulardii and Lactobacillus reuteri show great promise as potential medicinal agents.[9] A nonpathogenic yeast called Saccharomyces boulardii was discovered in Indonesian tropical fruits including lychees and mangosteens. Despite its close relationship to S. cerevisiae, it is distinct from other strains of S. cerevisiae in terms of taxonomy, physiology, metabolism, and genetics. There is no need to refrigerate lyophilized S. boulardii since it may survive at ambient temperature for indefinite periods of time (i.e., human body temperature). With its resistance to low pH and tolerance of bile acids, S. boulardii is able to survive its journey through the whole digestive system. Other strains of S. cerevisiae, on the other hand, do not perform well in acidic conditions and do better at lower temperatures. Antibiotic resistance occurs spontaneously in S. boulardii. Two to five days after treatment has been discontinued, S. boulardii has been eliminated from the faeces.

S. boulardii's effect on bacterial-origin disorders is a rapidly expanding body of knowledge, but the relationship between S. boulardii and Candida albicans is still relatively unexplored. C. albicans is a dimorphic fungus that lives symbiotically in the human digestive system.[10] The ability to transform between budding yeast and filamentous forms is a remarkable characteristic. The development of intricate biofilm structures is also made possible.[11] This morphotype switcheroo adds to the overall pathogenicity and is a promising new target for the development of antifungal medicines. We planned this study to evaluate the clinical efficacy by comparing saccharomyces boulardii with yogurt fluid in acute diarrhea so that the existing data may be updated with prospective trial in local population.

METHODOLOGY

Patients between the ages of 6 months and 2 years old with acute non-bloody diarrhoea (regardless of gender) for less than 14 days were included. Patients who reported taking an antibiotic within the previous 48 hours were also excluded, as were those with serious co-morbid conditions such as cardiac, renal, or respiratory disease, as were those who reported using anti-di (z score less than -3 for median WFH and HFA, according to WHO classification) or who had diarrhoea and showed signs of having blood in their stool when examined physically.

One hundred cases of acute diarrhoea meeting the inclusion criteria were recorded after obtaining written consent from the

parents or attendants of the patients. We managed to get details about them such names, ages, and sexes.

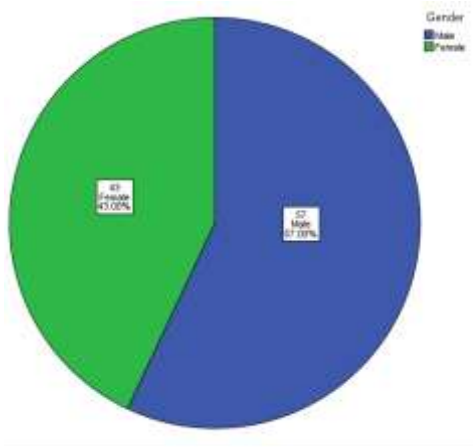
Assigning cases to either group (A) or (B) was done at random (using a lottery mechanism) (B). Group A received Saccharomyces boulardii (250 mg BD for five days), while Group B received a yoghurt fluid control (15 mL twice a day for children younger than 2 years of age and 30 mL twice a day for children older than 2 years of age). Those who were thirsty were given fluids, while those who were hungry were given plenty to eat. On day 5, the number of stools per day was counted to determine clinical efficacy. Three or fewer stools per day with a consistency of grade six or below were considered clinically effective. The data showed that until day 5, the average daily stool count stayed at three. The entire dataset was analysed using SPSS version 22. Quantitative information about sexual activity and the success of treatment was presented through the use of frequency and percentages. Researchers used the chi-square test to compare the two treatment groups' clinical outcomes after computing the mean and standard deviation of the quantitative data (age and reduction in stool frequency).

RESULTS

In our study, mean age in Group A was 12.36+4.35 months and in Group B 12.96+5.12 months, p-value=0.529, mean No. of stools before treatment was 7.36+1.21 in Group A and 7.50+1.22 in Group B, p-value=0.565, which reduced to 4.38+1.37 in Group A and 5.24+1.00 in Group B, p-value=0.001. Gender distribution shows that male were 57(57%) and 43(43%) were females. Comparison of clinical efficacy shows that 32(64%) in Group A and 21(42%) in Group-B, p-value=0.022 showing a significant difference.

Table 1:

	Group A (n=50)		Group A (n=50)		P value
	Mean	SD	Mean	SD	
Age(months)	12.36	4.35	12.96	5.12	0.529
No. of stools before treatment	7.36	1.21	7.50	1.22	0.565
No. of stools after treatment	4.38	1.37	5.24	1.00	0.001



Gender Distribution: Comparison of Clinical Efficacy

Table 2:

		Group		Total	P value
		A	B		
Efficacy	Yes	32	21	53	0.022
		64.0%	42.0%	53.0%	
	No	18	29	47	
		36.0%	58.0%	47.0%	
Total		50	50	100	
		100.0%	100.0%	100.0%	

DISCUSSION

About four billion cases of diarrhoea each year are attributed to infectious gastroenteritis, making it a major global health concern.[12] Increases in stool frequency (more than three times day), stool water content, and stool volume are all symptoms of diarrhoea. Although oral rehydration solutions (ORS) have been shown to greatly decrease mortality and morbidity from diarrhoea, they do nothing to speed up recovery time, alter stool consistency, or restore healthy gut bacteria.[13]

Probiotics are bacteria that may thrive in the human digestive system and provide health benefits when consumed in enough quantities by the host. It has been shown that some probiotic strains shorten the time that an individual has acute diarrhoea.[13–16] Some strains of Lactobacilli (Lactobacillus rhamnosus GG, Lactobacillus reuteri) and Saccharomyces boulardii are the most well researched probiotics to date. 4,5 Yogurt is a fermented milk product made by culturing milk with probiotic bacteria like Lactobacillus bulgaricus and Streptococcus thermophilus, and the fluid in yoghurt provides a safe haven for these microorganisms.[17] Yogurt is widely consumed and widely accessible in our country. In children with acute non-bloody diarrhoea, this prospective trial aimed to examine the clinical efficacy and cost/effectiveness of S. boulardii compared with yoghurt fluid (YF). We designed this research to investigate the clinical effectiveness of saccharomyces boulardii in acute diarrhoea by comparing it to yoghurt fluid.

In our study, mean age in Group A was 12.36+4.35 months and in Group B 12.96+5.12 months, p=0.529. Mean No. of stools before treatment was 7.36+1.21 in Group A and 7.50+1.22 in Group B, p=0.565, but decreased to 4.38+1.37 in Group A and 5.24+1.00 in Group B, p=0.001. Males were 57% and females 43%. Comparing clinical effectiveness between Groups A and B demonstrates a significant difference (p=0.022).

For children with acute nonbloody diarrhoea, Makbule Eren and coworkers[18] compare the effectiveness of Saccharomyces boulardii with that of yoghurt fluid (YF) from a clinical and cost/effectiveness perspective. S. boulardii was associated with a shorter duration of diarrhoea, whereas YF was associated with a shorter hospital stay; however, none of these differences was statistically significant. On day 3, considerably more children in the S. boulardii group exhibited no signs of diarrhoea (48.5% vs. 25%; P 0.05) compared to the control group. Yogurt therapy was less expensive than S. boulardii treatment for outpatients, whereas both were similarly priced for inpatients. In conclusion, daily freshly produced YF had an impact on children with acute non-bloody diarrhoea that was equivalent to that of S. boulardii. The S. boulardii group had a considerably larger proportion of patients with regular faeces on day 3, indicating a shorter period of diarrhoea.

Another study19 looked into the efficacy and safety of utilising Saccharomyces boulardii to cure GE in kids. There were 190 total instances, but only 10 could be moved forward. Median difference (MD) of -0.57 (95% CI of -0.83 to -0.30, p 0.0001) between Saccharomyces boulardii and the control group for the duration of diarrhoea (in days) was found in a meta-analysis of five investigations. The time it took to pass well formed stools did not differ significantly between the groups. No unintended effects were documented. Overall, the study project's methodology was given a "middle of the road" rating using the GRADE grading system. The study's findings suggested that Saccharomyces boulardii could be useful as a treatment for paediatric acute GE. At 250 milligrammes given once or twice day, there was some evidence of efficacy, and it appeared to be safe to use for up to five days. More extensive and rigorous randomised controlled trials are needed to verify the efficacy and safety of Saccharomyces boulardii before clear therapy recommendations can be made.

Finally, when treating children with acute diarrhoea, the use of probiotics may reduce the length of time the diarrhoea lasts, boost the effectiveness of therapy beyond the first two days of treatment, and decrease the amount of time the child has to spend

in the hospital. However, due to the possibility of publication bias in the present research, more RCT studies of a high quality that are conducted in clinical settings are required to validate the current findings and continue the investigation into this subject.

CONCLUSION

When treating children with acute diarrhoea, the administration of probiotics may reduce the duration of diarrhoea, extend the effectiveness of therapy beyond the first two days of treatment, and reduce the length of time the kid must remain in the hospital. These advantages can be realised by decreasing the amount of time a child spends in the hospital. In the treatment of acute diarrhoea in children without blood, we discovered that Saccharomyces Boulardi was substantially more effective than yoghurt fluid.

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