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Analysis of Yogurt and Commercial Probiotics Consumption in the Duration of Diarrhea in Children



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ABSTRACT

Introduction: Probiotics are living microbial food supplements which beneficially affect the host body by improving its microbial balance. **Objectives of the study:** The basic aim of the study was to analyze the yogurt and commercial probiotics consumption in the duration of diarrhea in children. **Methodology of the study:** This cross sectional study was conducted at Rangers teaching Hospital, Lahore during January 2019 to September 2019. For this purpose of study, we select the children of age 2 years to 10 years who consume the yogurt on daily basis. We get all the data related to dietary intake of selected participants. During the run-in period after stratification for body mass index (BMI) and age, participants were requested to record their dietary intakes for three nonconsecutive days. We select 70 participants for this study and divided into two groups. **Results:** Seventy children completed the study (29 girls, 41 boys; age 6.6 ± 3.0 years; weight 28.2 ± 11.0 kg; 36 placebo group, 34 probiotic group). Baseline characteristics were generally similar, but there were relatively more girls in the placebo group than in the probiotic group, and more children in the placebo group received antibiotic treatment. Analyses were also conducted to assess the differences in results for children with and without known susceptibility of diarrhoea in response to antibiotic treatment, and these differences were not significant (all $p > 0.7$). **Conclusion:** It is concluded that probiotics effect on diarrhea is controversial and it is the different patient materials (various diseases) and the different probiotic strains that have been used.



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INTRODUCTION

Probiotics are living microbial food supplements which beneficially affect the host body by improving its microbial balance. It has been indicated that the intake of probiotic product supplements have potential health benefits for healthy persons and also in disease prevention [1]. Some probiotic strains exert antioxidant activity and may be useful in reducing systemic oxidative stress and also stimulating the immune system, reducing inflammation and preventing cytokine-induced oxidative stress properties [2].

Oxidative stress which is referred to imbalance between prooxidants and antioxidants is very common in petrochemical workers. Exposure to petrochemical contaminants such as benzene, toluene, ethylbenzene, and xylenes and diesel exhaust particulate leads to increased production of reactive oxygen species (ROS) and free radicals, which in turn would result in increased oxidative stress. Increase in oxidative stress is widely thought as a mechanism involved in developing cancer, diabetes, Parkinson's disease, Alzheimer's disease, cardiac disease, neurological and psychiatric disorders [3]. Moreover, increased risk of some cancers such as melanoma, bladder and prostate carcinoma and pulmonary mesothelioma has been reported in petrochemical workers.

Gastrointestinal (GI) upset is a well-known complication of broad-spectrum antibiotics, especially the β -lactams, clindamycin and vancomycin [4]. These antibiotics may affect the function of normal bowel flora, cause overgrowth of unfavourable species such as *Staphylococcus*, *Candida*, *Enterobacteriaceae*, *Klebsiella* and *Clostridium* or cause changes in intestinal mucosa and motility. These changes often present as antibiotic-associated diarrhoea (AAD), which is distressing to both patients and carers and may result in poor compliance with antibiotic therapy [5]. The frequency of AAD depends on the definition of diarrhoea and the age of the patient but is estimated to be between 11% and 30% for children on oral antibiotics [6].

Objectives of the study

The basic aim of the study was to analyze the yogurt and commercial probiotics consumption in the duration of diarrhea in children.

MATERIALS AND METHODS

Methodology of the study

This cross sectional study was conducted at Rangers teaching Hospital, Lahore during January 2019 to September 2019. For this purpose of study, we select the children of age 2 years to 10 years who consume the yogurt on daily basis. We get all the data related to dietary intake of selected participants. During the run-in period after stratification for body mass index (BMI) and age, participants were requested to record their dietary intakes for three nonconsecutive days. We select 30 participants for this study and divided into two groups. One group was those who daily intake probiotic yogurt and one was those who do not intake yogurt.

Statistical analysis

Each experiment was repeated three times and all data were displayed in mean \pm SD and analysed through SPSS 19.0 (IBM, USA). T-test and one-way ANOVA were applied for measuring comparison among groups. $P < 0.05$ was considered to have statistical meaning.

RESULTS

Seventy children completed the study (29 girls, 41 boys; age 6.6 ± 3.0 years; weight 28.2 ± 11.0 kg; 36 placebo group, 34 probiotic group). Baseline characteristics were generally similar, but there were relatively more girls in the placebo group than in the probiotic group, and more children in the placebo group received antibiotic treatment. Analyses were also conducted to assess the differences in results for children with and without known susceptibility of diarrhoea in response to antibiotic treatment, and these differences were not significant (all $p > 0.7$).

Table No. 1: Comparison of cases of diarrhoea by different definitions in placebo and probiotic groups

Definitions of diarrhoea	Placebo cases/total participants	Probiotic cases/total participants	p Value
A (SC ≥ 5 , ≥ 2 stools/day for ≥ 2 days)	21/36	1/34	<0.001
B (SC ≥ 5 , ≥ 3 stools/day for ≥ 2 days)	16/36	0/34	<0.001
C (SC ≥ 6 , ≥ 2 stools/day for ≥ 2 days)	8/36	0/34	0.005
D (SC ≥ 6 , ≥ 3 stools/day for ≥ 2 days)	6/36	0/34	0.025
Any of the above	27/36	1/34	<0.001

Fisher's exact analysis. Stool consistency (SC) data is based on the Bristol Stool Scale.

Holm–Bonferroni corrected α values: A=0.01; B=0.0125; C=0.025; D=0.05; Any=0.0167.

DISCUSSION

Prior studies using different probiotics have shown variable effects and meta-analyses show equivocal results due to lack of homogeneity between studies. This suggests that not all probiotics are the same, so each probiotic needs to be tested for its efficacy in a specific context [7,8]. A recent review recommends further studies of probiotics in an outpatient setting. This research begins to fill this gap. In general, previous studies have reported on the incidence of diarrhoea as an all-or-none phenomenon and as such may not reflect the real world impact of GI distress. Our study demonstrates that there is a wide spectrum of apparent response to probiotics, depending on which levels of disease severity are analysed: mild events are associated with relatively low estimates of benefits from probiotics, whilst more severe events are associated with much larger estimates of benefits. Thus the apparent heterogeneity may be due in part to measurement issues [9].

On contrary to role of probiotics in the prevention of nosocomial diarrhea, we have only limited evidence of the role of probiotics in the prevention of nosocomial respiratory tract infection outside of intensive care unit. There are only two (although big) RCTs [10].

CONCLUSION

It is concluded that probiotics effect on diarrhea is controversial and it is the different patient materials (various diseases) and the different probiotic strains that have been used.

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