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## Protein energy malnutrition and the gut dysbiosis: Probiotics as an adjuvant therapy

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Protein Energy Malnutrition (PEM), one of the global devastating problems, contributes to nearly half of the deaths in children below five years of age. Inadequate intake or inappropriate nutrient absorption drives the people towards PEM, which exhibit a series of metabolic changes that leads to reduction in body weight, profound impairment on mucosal integrity, villi morphology and loss of beneficial gut flora as well as depression in mucosal immune response. Thereby, PEM is significant, nevertheless underestimated for infection susceptibility due to perturbances in gut flora and decreased protein, calorie source. In absence of any specific therapies, the therapeutic potential of diet, known to play a significant role in shaping gut microbiota, can be used to cure dysbiosis. However, encouraging data suggests that probiotics supplementation as an adjuvant to re-nutrition diet may help in reverting gut dysbiosis condition, occurred due to PEM. Therefore, the aim of the study is to develop PEM murine model and to evaluate body weight (primary indicator), organ index, histopathological changes between the malnourished and control group. Also, the malnourished gut had disturbed gut microbiota which resulted in malabsorption of nutrients and leaky gut conditions. However, oral administration of *Lactobacillus reuteri* LR6, as probiotic fermented milk (PFM-10<sup>9</sup> cfu/animal/day) and bacterial suspension (BS-10<sup>9</sup> cfu/animal/day) in PEM showed a significant improvement in morphological parameters and had a modulating effect on the gut microenvironment and mucosal immunity. Therefore, the study suggests that probiotics as a dietary supplement might assist in reversing malnutrition, acting as an adjuvant to boost gut barrier function.

### Biography

Sheenam Garg is a Microbiologist and has earned her MSc in Microbiology from Kurukshetra Institute, India. She has completed her PhD in Dairy Microbiology from National Dairy Research Institute, India and worked on research project entitled: Impact of probiotic *L. reuteri* LR6 on the gut and systemic immunity using protein energy malnutrition murine model. Besides, she holds Post graduate diploma in Intellectual Property Rights. Her research interests include expertise in Microbiology, Molecular Biology and Cell Biology techniques as well as in-vivo studies. She is a Recipient of Haryana Merit Scholarship and Institutional Fellowship during MSc and PhD programme respectively. Also, she has qualified National Eligibility Test recognized by UGC/CSIR. She has published many national/international research/review papers, book chapters and popular articles in reputed journals.

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