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A novel way to express the gluten load during micro-challenge tests in celiac children

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Celiac disease (CD) is an autoimmune disease that occurs in genetically predisposed persons where ingestion of gluten leads to damage of intestine. The only method of treatment of CD is to provide a gluten-free diet (GFD). The intestinal biopsy returns to normal on complete compliance with GFD, while even a small exposure to gluten again leads to histo-morphological changes in the intestinal mucosa. There is considerable heterogeneity across studies concerning complete mucosal recovery ratios achieved by a gluten-free diet in celiac disease. Several celiac patients fail to achieve complete mucosal recovery even if a strict dietary regimen is followed. Number of studies has tried to find out the minimum amount of gluten that can produce appreciable damage to intestinal mucosa. The unit of expression of gluten content of a diet or the gluten load to the intestine has been either in mg or in ppm. Both of them have certain limitations, therefore a novel concept of $\%G_{max}$ has been evolved to express the gluten load which is more individualized, country specific as well as scientific. G_{max} or gluten maximum is defined as the estimated amount of gluten in the diet, where all the cereal consumed according to the recommended dietary guidelines (RDGs) for an individual is from wheat or wheat products. Using this novel method of expressing gluten load and conducting a controlled clinical trial, it was found out that the gluten load capable of inducing noticeable mucosal changes in the small intestine of Indian CD children could be as low as below 0.1% G_{max}. While this dose was sufficient to bring out mucosal damage could show immunological changes in few and hematological changes in none. Therefore more studies are required to find out the $\%G_{max}$ which can produce other sign or symptoms.

Biography

Mahapatra C Sushil is a Physiologist with medical background has been working in the area of human nutrition since 1982 at the All India Institute of Medical Science, the most premier institute in India. His area of interest is largely being dietary fiber and nutritional management of diabetes. He got interested in the nutritional management of celiac children when Shikha Nayar joined him for her PhD.

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