

Regenerative Treatment for Inflammatory Bowel Disease (IBD)

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DESCRIPTION

Standard therapeutic approaches for treating Inflammatory Bowel Disease (IBD) are typically based on suppression of the host immune response; these medications primarily consist of 5-aminosalicylates, corticosteroids, thiopurines, and biologicals. The interaction between the host and intestinal microbiota seems to play an essential role in IBD pathogenesis. There is a significant need for novel therapeutic strategies because a substantial proportion of IBD patients do not obtain complete improvement during traditional medication. IBD treatment that focuses on the microbial dysbiosis associated with IBD. Treatments for IBD patients that successfully restore the intestinal microbiota include faecal microbiota transplantation, probiotics, prebiotic antibiotics, helminth therapy, and dietary polyphenols. Antibiotics, probiotics, prebiotics, and synbiotics are used in IBD patients.

A treatment strategy with few adverse effects has been found in this selective manipulation of the gut flora. Probiotics' role in IBD has been the target of comparatively few clinical trials. *Escherichia coli* (*E. coli*), a highly concentrated mixture of four *Lactobacillus* strains (*L. casei*, *L. plantarum*, *L. acidophilus*, and *L. delbrueckii subsp. bulgaricus*), three *Bifidobacterium* strains (*B. longum*, *B. breve*, and *B. infantis*), and one *Streptococcus* strain, is one of the most thoroughly studied probiotic preparations (*S. salivarius subsp. thermophilus*). IBD is a complicated disease with a wide range of phenotypes and severity by the factor influence of probiotic preparations in Ulcerative Colitis (UC) vs Celiac Disease (CD). Intestinal probiotic strains may be useful in a variety of clinical diseases and *via* various molecular processes.

Transforming intestinal wall cells into a condition of pluripotency and subsequent differentiation into a phenotype resistant to the pathogenic factors causing the disease and this demonstrated that intestinal cells may dedifferentiate at the onset of colitis, resulting in their resistance to harmful inflammatory processes and ultimately giving rise to new, completely functional healthy intestinal tissue. Fecal Microbiota Transplantation (FMT), a method based on the transfer of a stool sample derived from a healthy individual into the Gastro-Intestinal (GI) tract of a diseased patient, is one of the novel methods of treatment focused on the restoration of intestinal homeostasis. FMT restores vital microbiota elements that might prevent the inflammatory processes used in IBD. Preliminary studies have shown the clinical efficacy of FMT on refractory IBD or IBD associated with *Clostridium difficile* infection. FMT may potentially restore gut microbial homeostasis. The effectiveness of FMT in the treatment of IBD, despite the fact that the evidence is still scant. A meta-analysis of clinical studies was recently carried out to assess the effectiveness of FMT as a treatment for IBD. The use of bacteria as gene therapy vectors has a broad range of applications. Their usage in the clinic experiment was affected by partially growing concerns about the potential pathogenicity. Modern genetic engineering has successfully solved this issue to a significant extent. The strains that are currently on the market have undergone genetic modification to have reduced and well-defined virulence, which enables them to enter cells in the target tissue while maintaining the environment harmless. Because of their inherent capacity to survive in the intestinal environment, bacterial vectors are particularly suitable for the treatment of IBD.

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