

Treatment for IBD with microorganism mixtures

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Technology

Ulcerative colitis (UC) and Crohn's disease (CD) are inflammatory bowel diseases (IBD) that affect as many as 3.3 million people worldwide (GlobalData,2016). These chronic inflammatory conditions of the digestive tract significantly affect patient's quality of life and may lead to life-threatening complications. Currently no cure is available in market for CD and UC, and the treatments prescribed are directed toward the symptoms of the disease and include anti-inflammatory drugs, immune system suppressors and antibiotics in case of CD and 5-aminosalicylic acid, corticosteroids, immunomodulator drugs and biologics in case of UC.

Prof. Raz Jelinek and his team discovered therapeutics molecules that could potentially be used for treating IBD. Tryptophol and/or 4-Ethyl-Phenol were extracted and identified from medium of probiotic yogurt (e.g. kefir). The probiotic yogurt was comprised of mixture of microorganism including the yeast *Kluyveromyces marxianus* and at least one probiotic microorganism. The Tryptophol and 4-Ethyl-Phenol molecules were synthesized and the mixture, or the probiotic yogurt itself, was orally administrated once a day to dextran sodium sulfate (DSS) murine model. The treatment resulted in reduction of weight loss, reduction of colon shortening, significant decrease in clinical score and preservation of tissue structure with only minimal inflammation and even initial signs of colon tissue repair. Furthermore, the production of IL-6 and IL-1 α cytokines by macrophages was dramatically reduced in the presence of Tryptophol acetate and 4-Ethyl-Phenol derivatives, indicating anti-inflammatory effect of the molecules.

Advantages

- Novel potential treatment of IBD
- Easy synthesis procedure of the molecules
- Anti-inflammatory effect of the molecules
- Antimicrobial activity of the molecules

Applications

- Treating IBD
- Treating Leishmaniosis ulcers and wounds - therapeutic effect of the probiotic yogurt was demonstrated while applied topically
- Disease based on amyloid beta fibrillation - effective reduction of amyloid beta fibrillation was demonstrated in the presence of Kefir crude extract or Tryptophol acetate
- Antimicrobial agents - inhibition of biofilm formation of *Staphylococcus aureus* and *Salmonella* pathogenic bacteria by Tryptophol acetate, and *Sclerotinia sclerotiorum*, *Botrytis* and *Penicillium* fungi by the probiotic yogurt

Patent

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