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Guest Editorial

Microbial Flora, Prebiotics and Postbiotics

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Since ages, the notion that feces or "fecal substance" was considered as wastes of the net result of food after being digested absorbed and assimilated.

Lately this understanding of the wastes "by products" of food has changed, and the idea that feces which is the microbial flora consisting of bacteria, pathogenic and nonpathogenic, viruses, and parasites has been recognized as an organ by itself [1].

The feces in the gut was found to produce essential nutrients like vitamins. It also converts dietary fibers into useful short chain fatty acids and acts as a front door for defense (part of the immune system) [2].

Human intestine is the largest immune organ contributing about 70% of the immunity of the human body. The intestine is about 300m^2 in surface area predominated by trillions of living bacteria. It is colonized by approximately 10^{14} bacteria of more than 500 species, not all of them are culturable [3].

Food like bananas, onions and garlic, the skin of apples, chicory roots, beans and other vegetables and fruits contain non-digestible fibers which are not affected by the intestinal enzymes, these called prebiotic [4].

They pass through the small intestine after they are fermented in the large intestine and become beneficial to the good bacteria, "the probiotics", (nonpathogenic) which resides in the colon, they help them to increase and participate in better health of the organism in reducing disease risk [4].

The probiotics work as a whole or may disintegrate to become postbiotics

Postbiotic are compounds which are produced by the metabolic activity of probiotic with the fermented fibers, "the prebiotics" [5]. Since some of the probiotic may disintegrate, die and dissociate when they interact with prebiotics and as a net result they are considered and named postbiotics "It is the probiotic by-product". These byproducts have an important role in regulating and maintaining a healthy microflora [5].

Synbiotic, as a definition, it is the combination and interaction between probiotics and prebiotics [1].

In 2007 the term Prebiotic was modified as: A substrate that act and utilize the bacteria in the colon to improve health status [1].

Usually most prebiotics are given orally, utilizing fruits and vegetables.

The microbiota, "intestinal flora", can be manipulated by prebiotics with the possibilities to prevent or treat some disease like obesity and inflammatory bowel diseases [1].

However still there is no much knowledge about the prebiotic ability to specifically modify the intestinal microflora especially in children.

Lately the effect of probiotics on markers of inflammation and the composition of the diversity of the microbiome in children has been recognized [1], including the safety, efficacy and has been proven in many gastrointestinal diseases [1].

The fields of health benefit of prebiotics have been evolving, like inhibition of pathogens, immune stimulation, reduction of lipid in blood, effect on insulin resistance and mineral absorption and bioavailability [4].

Also, on cardiovascular disease, cholesterol level, obesity and autoimmune reaction [4].

Prebiotic effect on microflora extend beyond improving the status of *Bifidobacterial* and *Lactobacilli*, which are a major component of healthy micro flora, it has also an effect on other beneficial taxa like *Rosburia, Eubaterium* and or *Faecalibacterium* spp which also reside in the colon [6].

It may restore the dysbiosis of the unhealthy flora.

They Produce microbial metabolic products, short-chain fatty acids (SCFAs), they Promote ion and trace element absorption (such as that of calcium, iron, and magnesium), decrease luminal pH as a result they Suppress pathogen growth, and restrict pathogenic invasion, regulate the immune system by modulating of the cytokine expression and Treg Cell Expansion, and last but not least Increase IgA production [7], As for Postbiotics, they are bioactive probiotic-derived components, have a similar protective role on intestinal barrier function as that of live probiotics [8].

The bioactive components 'postbiotics'. They enhance intestinal mucin expression, prevent lipopolysaccharide (LPS)- or tumor necrosis factor α (TNF-α)- to induce intestinal barrier injury, downregulate of intestinal mucin (MUC2), Improve, Zonula occludens-1 (ZO-1) (Tight Junction), protect against disruption of the intestinal integrity [9].

Doses and safety are the main issue in using prebiotics [2].

The adequate dose depends upon the status of the host [2].

The future will reveal more amazing effect on the health status.

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