International Journal of Applied Social Science
Volume 6 (7&8), July & August (2019) : 891-894
Received : 12.02.2019; Revised : 26.02.2019; Accepted : 12.03.2019

REVIEW PAPER
ISSN : 2394-1405 (Print)

Accelerate Role of Pre-biotic for Pro-biotic in Intestinal tract: An Inferant Occurrence

MADHU*[1] AND NEETU SINGH[2]
[1]Research Scholar and [2]Assistant Professor
Department of Human Development and Family Studies, School for Home Sciences
Babasaheb Bhimrao Ambedkar University (Central University) Vidya Vihar, Raibareli Road, Lucknow (U.P.) India

ABSTRACT

Prebiotic is naturally occurring non-digestible fibers found in some fruits and vegetable (Banana, Mangos and Onions Garlics, Potatoes etc.), The Metabolic rate of the body is accelerated by the use of prebiotic. Periotic is non-digestible foods and complex carbohydrate as like inulin, its derivatives of Fractooligosaccharides (FOSs) and Glactooligosaccharides (GOSs). Dietary fibers, also non digestible food which are two types-soluble fibers such as like hemicelluloses such as fruits and cereals, and non-soluble fibers are- lignin and celluloses, which are found in bran are not as well fermented, and hold water until the fecal mass is excreted, having selective fermenting ingredients that is required by microbiota of human gut. Microbiota is present in human GI (gastrointestinal) colon which is the most metabolically active organ. There is very long-term human intervention study that has assessed the effects of prebiotic on bone health. The study was conducted on adolescents and used a combination of Fracto oligosaccharides (FOS) and long chain insulin (50/50). The GI tract is sometimes described as the body's largest immune organ. It represent the host's greatest area of mucosal contact with the environment and contains as many as 80% of all antibody-producing cells. The intestinal microbiota is also a vital part of the body's system. Probiotics is a live beneficial bacteria as like *Saccharomyces, streptococcus* and *Lactococcus* their major sources of milk and fermented product, the microbial cultures produce a variety of enzymes such as amylase, protease, lipase, xylanase and cellulose in high concentrations than the native bacteria, which help in degrading the waste. Probiotics foods are play a major role in digestion. The main objective of this study- to identify prebiotic food items and their nutritive value, to know the selected prebiotics food items who accelerate probiotic condition. And to associate grow of probiotics in the presence of prebiotics.

Key Words : Prebiotic, Probiotic, Fractooligosaccharides(FOSs), Glactooligosaccharides(GOSs), Microbiota, Dietary fibers

INTRODUCTION

The origin of probiotics and prebiotics:

The word "Probiotic" (origins: Latin pro meaning "for" and Greek bios meaning "life") was first used in 1954 to indicate substances that were required for a healthy life. According to the FAO/WHO panel (FAO/WHO, 2001). " Live micro-organisms which when administered in adequate amounts, confer a health benefit on the host".

As the mentioned, the original proposed that certain bacteria could benefit human health is usually attributed to llya Metchnikoff, who worked at the pasture institute at the beginning of the twentieth century. His insights still have resonance today:

"The dependence of the intestinal microbes on the food makes it possible to adopt measures to modify the flora in our bodies and to replace the harmful microbes by *usual* microbes" and "systematic investigations should be made on the relation of gut microbes to precocious

How to cite this Article: Madhu and Singh, Neetu (2019). Accelerate Role of Pre-biotic for Pro-biotic in Intestinal tract: An Inferant Occurrence. *Internat. J. Appl. Soc. Sci.,* **6** (7&8) : 891-894.

old age, and on the influence of diets which prevent intestinal putrefaction in prolonging life and prevent intestinal putrefaction in prolonging life and maintaining the forces of the body."

As mentioned, the Japanese were the first to recognize the value of fermentable oligosaccharide, initially in feeding piglets and later, during the 1980s, with the identification of human milk oligosaccharides. However, it was not until 1995 that the prebiotic concept for modulation of gut microbiota was introduced. The most recent was agreed at the 2010 Meeting of the International Scientific Association of Probiotics and prebiotics (ISAPP) (Gibson *et al.,* 2011).

"A dietary prebiotic is a selectively fermented ingredient that results in specific changes, in the composition and/ or activity of the gastrointestinal microbiota, thus conferring benefits(s) upon host health" (Binns, 2013).

Prebiotics are found in fruits and vegetables and some can be processed industrially from renewable materials. Prebiotics are work as functional foods, prebiotics must be chemically stable to processing treatments of food, such as high temperature, low pH, and Millard reaction conditions. Now a days known prebiotics and probiotic candidates are non-digestible oligosaccharides. They are found from plants (e.g., chicory inulin), enzymatic hydrolysis (e.g. oligo fructose from inulin), or by synthesis (by trans-glycosylation reactions) from mono or disaccharides such as sucrose (fructooligosaccharides) or lactose (trans- galactosylated oligosaccharides or galactooligosaccharides). These are number of prebiotic substances present in human milk, the most abundant of which are oligosaccharides (Kolida and Gibson, 2007 and Fanaro *et al.,* 2005).

Sources of prebiotic :

Inulin- Inulin is found in 36,000 plants such as:

Herbs-chicory root, burdock root and dandelion root

Fruits- such as apples, bananas

Sweet vegetables- such as onions, garlic asparagus, leeks and Jerusalem artichokes

Raw apple cider vinegar

EcoBloom- body ecology's pre-biotic dietary fiber supplement (The Weight Watchers Research Department, 2009 and American Dietetic Association, 2010).

Prebiotic food items and their nutritive value:

Prebiotic Foods	Fiber by weight	Amount of daily serving needed
Raw Chicory Root	64%	9.3 grams
Dandelion Greens	24%	24.7 grams
Raw Jerusalem Artichoke	31.5%	19 grams
Raw Garlic	17.5%	34.3 grams
Raw Onions	8.6%	69.8 grams
Cooked Onion	5.0%	120 grams
Raw Leeks	11.7%	51.3 grams
Raw Asparagus	5.0%	120 grams
Raw Wheat Bran	5.0	120 grams
Baked Wheat Flour	4.8%	125 grams
Raw Banana	1.0%	600 grams

Source- Prebiotin prebiotic

Pro-biotic food:

Foods high in pro-biotic are fermented dairy products. These foods naturally contain both pre-biotic, making them symbiotic. Some of the common fermented dairy products include- Yogurt, cheeses, kefir, sour cream etc.

Accelerate of prebiotic for probiotic:

In the mucus layer, the epithelial lining of the mucosal tissues and same as the immune cells, present at sub-epithelial level, whole part of the mucosal barrier. Therefore, inflection at all these levels can positively affect obstruction robustness and thereby, influence disease states (Liu *et al.*, 2011; Hyland *et al*., 2014). At cellular level, epithelial cells are at the center stage of the barrier effect, acceptance molecular signals from the gut lumen, exchanging signals with the fundamental immune cells but also communicating with the entire organism by means of circulating signaling molecules. In which gut barrier plays a major role in the pathogenesis of various gastrointestinal diseases such as inflammatory bowel disease (IBD), irritable bowel syndrome (IBS), coeliac disease and infectious enter colitis (Blaut and Klaus, 2012). Therefore, selecting probiotic strains that can strengthen the gut barrier appears to be a relevant approach with broad impact on different types of diseases (van Hemert *et al.*, 2013).

Many researchers are using Caco-2 intestinal cells and mice showed that *L. rhamnosus* GG (LGG) or the probiotic mix VSL#3 could interact openly with intestinal epithelial cells and preserve the veracity of the epithelial barrier. LGG persistence capacity in the GIT was linked to its *in vivo* expression of pili containing a mucus binding domain (Lebeer *et al.*, 2012).

Probiotic-derived antibacterial ingredients show their

effects separately or synergistically to inhibit the growth of pathogenic bacteria. Probiotics have been appeared to produce a wide range of dissimilar bacteriocins such as nicin (Arauz *et al*., 2009) which constitute the major mechanism for their antimicrobial action. *Lactobacillus acidophilus* has been reported to yield acidophillin, lactocidin, and acidolin and *Lactobacillus planatarum* produces lactolin (Vila *et al*., 2010). Bacteriocin produced by probiotic strain *Lactobacillus salivarius* UCC118, protect the mice against impurity with the invasive foodborne pathogen *Listeria monocytogenes.* From the educations it was also inveterate that antimicrobial effect was mediated by the bacteriocin Abp118 produced by direct antipathy between *Lb. salivarius* and the pathogen (Corr *et al*., 2007). Lactobacilli and bifidobacteria have been shown to inhibit a broad range of pathogens, including *E. coli*, *Salmonella*, *Helicobacter pylori, Listeria monocytogenes* and Rotavirus (Bermudez-Brito *et al.,* 2012). Bacteriocins formed by Gram-positive bacteria have a narrow activity variety and act only against closely related bacteria, however, some bacteriocins inhibit food-borne pathogens like *Listeria monocytogenes* (Nielsen *et al.*, 2010).

Conclusion:

The various prebiotic compounds are generally not altered by diet processing and require limited regulatory approval, making their use much simpler than using drugs or chemical therapeutic agents. Now-a-days, there is an increasing trend of consumer awareness towards the demand for functional foods, which are claimed to enhance the health of the consumer. Apart from other food ingredients, Prebiotics are among those which have attracted much attention recently.

The world demand for Prebiotics is estimated to be around 167,700 tons and to be worth 390 million Euro. A prebiotics is "a non-digestible and selectively fermented ingredient that allow specific changes, both in the Composition and/or activity in the gastrointestinal microbiota that confers benefits upon host well-being and health". They cannot be digested by α-amylase or other hydrolases in the upper gut section of the intestinal tract. In general, prebiotics can be considered as a 'food' for probiotics.

The fermentation of prebiotics which is probiotic bacteria improves the host's health by enhancing the absorption of minerals such as Ca, Mg, and Fe and producing compounds capable of preventing colon cancer. Through fermentation, a large quantity Of Acids Is Produced, Including Short-Chain Fatty Acids, Resulting in the Decrease of Ph. and Potential Reduction in the Numbers of Pathogenic Microorganisms. Gastrointestinal Physiology Is Also Affected by These Activities, Which is help in Human Health.

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