Journal of Infectious Diseases: Prevention and Control

Extended Abstract
Vol. 2, Iss. 2
2019

Infectious Diseases Conf 2019: Probiotics: Better life! - Mohamad Miqdady- Sheikh Khalifa Medical City, UAE

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It is quite humbling to know that most of the cells in our bodies are bacterial cells. Moreover, the bacterial system is the largest organ in our body. There are more than a thousand different species in our body that lives in harmony with us. It is therefore a good reason that is helping us to stay healthy. The science of probiotics is mounting exponentially. There is a huge amount of research being done all over the world to demystify this unique system. The role of probiotics in clinical practice is expanding very fast, it is indicated in various gastrointestinal disorders, for example, diarrheal illnesses whether that is infectious (Rota, C. Diff, etc.) or antibiotic-induced or inflammatory in nature like inflammatory bowel disease. Others may include irritable bowel syndrome, recurrent abdominal pain and several others. A hostile environment like birth by cesarean section, formula fed, frequent use of antibiotics or severe chronic illness may affect the probiotic milieu negatively. These kinds of patients may benefit from restoring their bacterial system. Strong evidence-based practice guidelines by international societies are limited, giving a huge number of different probiotics and the substantial differences in the methodology of these studies.

Probiotics are live microorganisms that are marketed with claims that when ingested they have health benefits, usually by enhancing or restoring the gut flora. Probiotics are generally considered safe to consume, but can in rare cases cause interactions between bacteria and the host and unwanted side effects. There is little evidence that probiotics bring them the claimed health benefits. The original theory is generally attributed to Nobel laureate Élie Metchnikoff, who postulated that yogurt-consuming Bulgarian peasants lived longer, similar to the modern concept but not the term. A increasing demand for probiotics has led to the need for more rigorous criteria for scientific substantiation of the putative benefits that micro-organisms claim to be probiotic. Manipulating the gut microbiota is complex, and can cause interactions between bacteria and the host. Even though probiotics are considered safe, in some cases some have questions about their safety. Some individuals may be at greater risk for adverse effects, such as those with immunodeficiency, short bowel syndrome, central venous catheters, heart valve disease and premature babies. There is a risk of passing viable bacteria from the gastrointestinal tract to the internal organs (bacterial translocation) as a result of bacteremia in severely ill people with inflammatory bowel disease, which can cause adverse health consequences. In rare cases, the use of probiotics by children with reduced immune system function or who are already critically ill may cause bacteria. Firstly, probiotics must be alive when administered. One of the issues in the scientific literature is the viability and reproducibility of reported findings for particular trials on a wide scale, as well as the viability and stability during use and storage, and finally the ability to survive in stomach acids and then in the intestinal ecosystem. Second, to document health benefits in the target host, probiotics must have undergone a controlled assessment. Only products containing live organisms which are shown to confer a health benefit in reproducible human studies that claim to be probiotic. The correct definition of health benefit, supported by sound scientific evidence, is a strong element for properly identifying and assessing the effect. This aspect is a challenge for scientific and industrial research because it presents several difficulties, such as site variability for probiotic use (oral, vaginal, intestinal) and mode of application. Third, the probiotic candidate must be a microbe or combination of microbes defined by taxonomy (genus, species, and strain). Most probiotic effects are widely agreed to be strain-specific, and can not be applied to other probiotics of the same genus or species. This requires an accurate identification of the strain, i.e. the genotypical and phenotypical characterization of the m tested. Several clinical trials provide proof of the probiotics ability to reduce the risk of enterocolitis necrotizing and mortality in premature infants. One meta-analysis suggested that, compared with controls,

This work is partly presented at 14th International Conference on Infectious Diseases, Prevention and Control during March 21-22, 2019 held at Dubai, UAE

probiotics minimize these risks by more than 50 per cent. The ability of probiotics to affect inflammatory bowel disease is being studied. Some research supports their use in combination with traditional medications in the treatment of ulcerative colitis, although there is no proof of their efficacy in the treatment of Crohn's illness. Some LAB strains can affect pathogens through competitive inhibition (i.e., by competing for growth), and some evidence suggests that they can improve immune function by increasing the number of plasma cells producing IgA and increasing or improving phagocytosis, as well as increasing the proportion of T lymphocytes and natural killer cells. Probiotic treatment of bacterial vaginosis is the use or absorption of bacterial species present in the healthy vagina to relieve bacterial infection that causes bacterial vaginosis. This procedure is based on the finding that 70 per cent of healthy women in the genus Lactobacillus have a community of bacteria that controls the vagina population of species. The effectiveness of such treatment has currently been mixed, because the use of probiotics to restore stable Lactobacillus populations has not been standardized. Normal antibiotic therapy is also used when probiotics are being evaluated at the same time. Additionally, some groups of women react to care based on race, age, number of sexual partners, pregnancy and the causative pathogens. Antibiotics are a common treatment for children, with 11 to 40 percent of children treated with antibiotics developing diarrhea.[81] Antibiotic-associated diarrhea (AAD) results from a colonic microbiota imbalance caused by antibiotic therapy. Such modifications in the microbial environment result in improvements in the metabolism of carbohydrates, with decreased absorption of short chain fatty acids and osmotic diarrhea as result.

Probiotic treatment can reduce the incidence and severity of AAD as shown in several meta-analyses. Treatment with probiotic formulations like L, for example. Rhamnosus may reduce the risk of AAD, improve the consistency of stools during antibiotic therapy and increase immune response following vaccination.