EuroSciCon

EuroSciCon Conference on

Bacteriology and Mycology

June 18-19, 2018
Paris, France

Arch Clin Microbiol 2018, Volume: 9
DOI: 10.4172/1989-8436-C1-006

HUMAN MICROBIOME AND ITS IMPACT ON HUMAN DISEASE

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According to the 'hygiene hypothesis' changes in lifestyle in industrialized countries have led to a decrease of the infectious disease and these changes in lifestyle seems to be associated with the rise of allergic and autoimmune diseases. Industrialization by modern humans has significantly altered the earth's environment. The Paris agreement on the climate change might slow down, although a tip of iceberg, the dangerous human trend toward our environment. However, by not avoiding the present trend, our symbiotic relation with the microorganisms and their habitats will also be affected significantly. And, as much as we are hoping to eradicate the old diseases, new ones are and will be emerging with more power and perhaps with the chance of their success over humans. As a developed species of animal kingdom, human's intestinal tract contains the most populations of bacteria. Perhaps, more than anywhere else we can imagine. This highly diverse human gut environment has, probably been adapted since Paleolithic humans, when fire was used and changed the nature of food consumption. Such evolutionary changes resulted in the alterations in the human gut microbiota. Other significant historical changes in the human microbiota might have happened by the industrialization of the societies. In addition, our social and personal behaviours have added to such chaotic microenvironment throughout the human evolution. Such unpredictability of microenvironment changes goes two ways. Although, negative impact such as increased microbial resistance, transfer of resistance genes and etc. are all examples of the negative effects of human gut microenvironment changes, it has been shown that in the inflammatory bowel disease (IBD) patients, a helminthic infection may result in an increase in population of good bacteria and also the integrity of the gut cells is improved. We have also shown in our research that in the Iranian patients with IBD, a significant reduction of Lactobacillus spp. both in numbers and their activities was evident. This reduction, in turn, has had an effect on the human health activities, further suggesting microbiota-organ axis. In conclusion, the human intestinal tract harbours a diverse and complex microbial community which plays a central role in human health. In recent years it has been cleared that human gut microbiome coevolved with us and could affect our wellbeing.

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