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Commentary

A study on food additives and metabolic disorders

Monika Thakur*

Department of Food Technology, Amity University, Uttar Pradesh, India.

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DESCRIPTION

Human diet contains a lot of chemicals that are derived both purposefully and inadvertently from environmental sources. Intentionally added food additives have a significant impact on how tasty food is. Although their necessity in food processing is widely established, the majority of additives are synthetic, and their potential health hazards are recognized. Food should not only be palatable so that we want to consume it, but also tasty enough to guarantee sufficient quality and safety. The use of food additives differs from location to region due to racial or cultural diversity and the availability of local foods. More than ten thousand chemicals are permitted in food, but limited enforcement makes it difficult for regulatory organizations to discover those that have undergone insufficient or no safety testing.

Numerous industrialized and developing nations have changed their lifestyles, including their culinary and dietary preferences, as a result of population growth and urbanization. The current manner of living in this globalized world, in particular, calls for meals, snacks, sweets, soft drinks, desserts, confectionery, and other items that are ready to eat or ready to prepare. These foods would be incredibly boring if they weren't treated with chemicals. This puts pressure on the food industry to offer foods that are either completely, fully processed, or ultra-processed utilizing a lot of chemicals. The way we eat and what we eat both have a big effect on how healthy we are. The health impact of food has so far addressed the amount of salt, fat, and sugar as well as the absence of fiber. The extent of food processing, however, has lately been raised as a potential major contributor. Furthermore, there is considerable evidence linking the gut microbiota to obesity, related illnesses, and food.

The gut system may become unbalanced as a result of a Western diet that is high in processed foods and food additives since these foods alter the gut bacteria's metabolism. Consuming food additives carries significant health concerns for both children and adults. A growing amount of research on food additives in various experimental animals, cell cultures, and the general population indicates an increase in the risk factors for obesity and diabetes i.e. Obesity, dyslipidemia, weight gain, hyperglycemia, insulin resistance, glucose intolerance, energy imbalance, hormonal intervention, etc. Obesity, type 2 diabetes, and atherosclerosis are just a few of the metabolic problems that the human gut microbiota has been linked to clarifying the function of gut bacteria in regulating metabolism requires an understanding of the contribution of microbiome metabolic alterations. To examine the mechanistic involvement of the gut microbiome in metabolic illnesses, metagenomics data from various metabolic disorders were combined with genome-scale metabolic modelling of important bacteria at the individual and community level. Modeling suggested that gut bacteria present in all illnesses would produce more ammonia, arginine, and proline as well as consume more glutamate.

Network dependent analysis and abundance profiles revealed the tartrate dehydrogenase enrichment in the diseases. Additionally, connections between metabolites like proline and tyrosine and an enhanced tartrate metabolism were found in healthy obese persons, according to independent plasma metabolite levels. Food additives are widely utilized in the business, and several dangerous compounds, including heavy metals, organic pollutants, pesticides, and antibiotics, have been discovered in foods. These drugs may have an impact on the variety and composition of the gut microbiota, which is crucial for both host health and illness. So, by interfering with the gut microbiota's ability to maintain homeostasis, these drugs may exhibit harmful effects. On the other hand, it was discovered that some dietary bioactive substances might correct the dysbiosis of the gut microbiota. Therefore, through modulating the gut microbiota, some dietary natural items may be able to reduce the toxicities of hazardous compounds on humans. Additionally, the preventive benefits of dietary

*Corresponding author. Monika Thakur, E-mail: monika.akur06@gmail.com.

bioactive components are examined. The impacts of many hazardous drugs and additives on gut flora are outlined, a deeper knowledge of dietary natural goods that target the gut microbiota to lessen the toxicities of hazardous compounds on people. Given the prevalence of dangerous ingredients and additions in meals, this topic would attract more attention in the future to protect human health. Restoring gut microbiota symbiosis brought on by toxic chemicals. In order to lessen the toxicity of dangerous compounds and safeguard human health, greater focus should be placed in the future on the study of additional dietary plants and their constituents with gut microbiota regulating effects.