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Food, Mood and Microbes

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Changing of lifestyle has an effect on the quality of human life; it results in stressful experiences in the daily life. There are various reasons in our daily life, such as work pressure, food habit, sleeping habits etc., which may cause the mental stress. Mental stress leads to abnormal homeostasis, enzyme secretion, and metabolic disorders; therefore it can cause diabetes, gastritis syndrome, irritable bowel syndrome (IBS), inflammatory bowel disease (IBD) and other health-related problems. Getting rid of mental stress without the use of medicines is the need of the hour. It is high time that the whole world starts thinking about the issue seriously. The number of patients with mental illness is rising every year. In the 21st century, it is a new challenge for scientists, doctors, researchers that how to overcome this problem. Till now in medical science, there is no remedy and, therefore doctors prescribe only neuro medicines. These medicines create neuro disorders or other diseases in the long term in the patients. It is believed that food only can be a substitute for these medicines and give relief from mental stress. In the ancient time people knew that the human gut plays major role to controling psychological behaviour, therefore a new term "gut feeling" is coined and adopted from that ancient time. Now a day scientists have been trying to establish a relation between brain and gut. It has already been found that there exists an extensive network of neurons, neurotransmitters and hormones that are connected to our gut and brain, this network is called the brain-gut axis. Actually the human gut is a residence of 10^{14} microorganisms, including bacteria, viruses, fungi, and protozoa, that are commensal with the human intestinal tract. But total number of human body cell is 10^{13}. It means that 1 human is equivalent to 10 microbes; from this data it can be thought that gut microbes have some role in human physiology. There are two main predominant bacterial groups present in the gut, gram-positive *Firmicutes*, and gram-negative *Bacteroidetes*. The health benefit contribution of microbes to the host through occurs the biosynthesis of bioactive compounds, vitamins, and essential amino acids, short chain fatty acid (SCFA) by-products such as butyrate, propionate, and acetate. These three SCFA by-products act as neurotransmitters. It has been seen that carbohydrates are the major dietary component for the gut microbiome. Digestible and non-digestible both forms of carbohydrates are present in our normal diet. Basically digestible carbohydrates are degraded by our digestive enzyme and after digestion it enters into the bloodstream in the form of sugar monomers. But it has been reported that digestible carbohydrates do not reach the colon, therefore the resident microbes there do not get their food for their survival. Non-digestible carbohydrates such as fiber and resistant starch are not enzymatically degraded in the stomach. The dietary fibers travel from intestine to colon and are fermented by microbes, which in produced bioactive compounds which help to control the psychological behaviours. From this fact the concept of probiotic and prebiotic have come. Prebiotic is the dietary components that stimulate certain gut microbes (probiotic) as a result the host gets the health benefit from the probiotic. So beyond the nutraceutical aspect intake of healthy foods also means to support the probiotics, and that would help to change our mood. It actually gives strength for our behavioural activities and making relationships with the environment. Eating is not just out of hunger; in the last few decades, we have learned an enormously about the relation of psychology and food. 'Mood and eat' is the idea that the emotions, not just hunger, affect how and what we eat. Experiments show, generally when a person is in a bad mood, he/she is more likely to reach for sugary and high-fat diet. Phytonutrients and polyphenols help betterments of moods. A new area will explore in the future that microbial identity. Bacterial fingerprint will be the signature of the bacterial fingerprint

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for the identity of the individual. Each individual has his or her own microbial community in his or her gut and some extend it is unique to each individual. Some researchers believe that human genome influences gut microbes, but the working relationship is still not revealed. About 30 - 40 percent of the microbial community will vary by changing our diet drastically. In some way, we will thus get a new microbial identity until if we change our diet.