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Editorial

Fermented Foods and Health

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The fermentation of foods is an ancient practise that has helped to transform foods and helped to diversify diet in many cultures across the world. Many African and Asian countries rely on several indigenous fermented foods as part of their diet where cold storage preservation is a challenge. Apart from the improved shelf life of fermented foods, they also have good health benefits in the gut when consumed. There is a resurge in the contribution of fermented foods to human health and it will continue to be an important research topic in the nearest future.

The transformation of the nutrients in foods when fermented is brought about by the action of microorganisms which may occur spontaneously or added as a starter organism. The fermenting microbes are able to transform sugars into simple acids, alcohols and carbon dioxide as major end products. In addition, a whole range of secondary metabolites, including vitamins, polyols, or antioxidants, can be produced which may offer specific health benefits. Fermented foods come in many forms, for example, yoghurt, sour cream, sour dough bread, vegetables, chutneys and pickles. Other well known fermented foods with health giving properties are: *Kefir, Kombucha, Sauerkraut, Miso, Tempeh, Natto* and *Kimchi*. If the foods are not made using lactic acid bacteria as in Kimchi probiotics in the form of live bacteria or yeast may be added. The relationship between diet and health is a well established phenomenon that was recognized in the past but still rings true today. The diet in early human civilisation was rich in complex carbohydrates but nowadays in industrialized societies it has typically shifted to the so called 'Western diet' which is characterized by high fat, high proteins and low fibre intake [1].

The science of Nutrition responds to new facts that emerge from research to promote good health. Henceforth, the nutritional quality of foods and their influence on health is an important topic area and there is an increased global demand for 'functional foods' and 'super foods'. As a result of this emerging trend, the development of new food products with health giving properties will have great potential market values.

At birth, the human gut is known to be sterile without microbes. Resident or commensal microbiota colonize the mammalian gut shortly after birth and remain there throughout life. In humans, the lower intestine contains 10^{14}-10^{15} bacteria, that is, there are 10-100 times more bacteria in the gut than eukaryotic cells (10^{13}) in the human body [2]. The consumption of fermented foods has an influence on the gut bacteria at a microbial level, on a biochemical level; regulatory signals are received by the gut from the central nervous system and vice versa. There are ongoing research interests in this kind of interaction that are related to "personal genomics" – since our gut bacteria and environmental bacteria can play dominant impacts on our wellbeing. Apart from our genes, the colonization of the gut by bacteria at birth is mostly influenced by the environment and what we eat the more diverse the better.

The influence of gut microbes on the central nervous system was reviewed by Wang and Kasper (2014), they analyzed how microbiome liaises the bi-directional communication between gut and the critical distal site of central nervous system, and the mechanisms that guide each direction of function. They summarized the range of central nervous system disorders that are influenced by microbiome, which could be broadly classified into immune- and non-immune-mediated types [3].

Microbiome modulation can serve as an integral mechanism underlying diet-based treatment and a better understanding of the microbiome may provide novel avenues for therapeutics against neurological diseases. There are recent reports on the importance of gut microbiota impairment in the etiopathogenesis of pathology such as autism, dementia and mood disorder. However, a deeper research assessment of mood disorders and autism spectrum disorder is advocated [4]. The influence of fermented foods on what is happening in the gut and how it affects the mental activities of the brain are expected to be important aspects that will be prominent in future research topics.

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