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Effects of sugar sources and incubation time on the properties of tea fungus (Kombucha) beverage

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Fermented kombucha tea is believed to have extraordinarily antioxidant rich, which can boost immune system and energy levels. In this study, the effects of sugar sources and fermentation time on physicochemical and antioxidant activities of kombucha system were determined. White refined sugar, coconut palm sugar and molasses were used individually as the carbon source in the kombucha tea's preparation. Physicochemical analyses were conducted using standard methods. The concentrations of natural sugars and organic acids in the kombucha beverage were analyzed using HPLC. Antioxidant activities were evaluated using total phenolic compound, total flavonoid content, DPPH radical-scavenging activity and ferric reducing power. Fermented Kombucha tea prepared using different type of sugars demonstrated different values of physicochemical properties and antioxidant activities. All the prepared kombucha teas have changes in color, decreased in pH values and total soluble solids but increased in biomass (bio-cellulose) production after 14 days of fermentation. Kombucha tea using white refined sugar was shown to have the highest bio-cellulose formation as well as glucose (3.88 g/ml) and sucrose (83.0 g/ml) content. Kombucha tea prepared using molasses contain 94.38% moisture, 0.60% ash, 0.13% crude protein and 2.42 g/ml fructose which is significantly higher compared to the others. Kombucha tea with molasses also contains the highest organic acids (tartaric acid, malic acid, acetic acid and succinic acid). The highest antioxidant activity and total phenolic content was the kombucha tea prepared using coconut palm sugar after 12 days of fermentation.

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Probiotics, prebiotics, nutraceuticals and pharmaceuticals: The new frontier

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Many food components have clearly established strong links with human health and it is learnt that their deficiencies can provoke diseases. The epidemiological evidences and modern research in nutrition during the last few decades elaborated the molecular level of interactions between specific food constituents with cells to control and prevent some diseases. It is nowadays acknowledged the critical role of the "forgotten organ", the enteric micro-biota, in generating a variety of functions which sustain health. The beneficial interaction between the micro-biota and humans is the way how bacteria contained within the gut "talk" to the immune system. Into this landscape probiotics, prebiotics and nutraceuticals play a major role. Several human diseases have benefited from the use of probiotics. Prebiotics promote the growth of "good" bacteria and variety of health benefits have been attributed to their use. Nutraceuticals, the "drugs for healthy people" can prevent and in some cases cure some pathological conditions, e.g., the ones related to the metabolic syndrome. The bioactive constituents extracted and concentrated from many foods mainly of vegetal origin (phyto-complexes) have been identified and knowledge about their use in nutrition is expanding. They represent a frontier to be explored at the interface between nutrition and pharmaceutics and a new important tool to prevent the onset of heath condition and to limit the use of pharmaceuticals in a preventive pro active approach.

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