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Short Communication

Effects of Natural Sorghum Fermentation on Food Biotechnology

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DESCRIPTION

Fermentation in the context of food processing is the anaerobic (oxygen-free) transformation of carbohydrates by yeasts or bacteria into alcohol or organic acids. In most cases, the term "fermentation" implies that microbial action is intended. Zymology or zymurgy is the study of fermentation. The process of turning sugars into ethanol chemically to create alcoholic beverages like wine, beer, and cider is commonly referred to as “fermentation”. Comparable processes also occur during the leavening of bread and during the lactic acid production that occurs during the preservation of sour foods like yoghurt and sauerkraut. Vinegar, olives, and cheese are a few more fermented foods that are popularly consumed. Beans, grains, vegetables, fruit, honey, and dairy products may also be used to make more regionally specific dishes that are fermented [1-3].

According to pertinent research findings, fermentation may boost the amount of sorghum amylose chains present as well as their retro gradation potential. Therefore, by performing a fermentation pre-treatment on the sorghum and extracting the resistant starch from the fermented sorghum using a pressure-heat compound enzyme method, this study investigated the effect of fermentation pre-treatment on the yield, digestibility, molecular structure, and *in vitro* fermentation property of sorghum-resistant starch. These were the outcomes. After pre-treatment with fermentation, the sorghum-resistant starch output increased, its digestibility decreased, the size of the laminated structure on the surface of the particles improved, and the stacking mode became more orderly and dense. The functional group peak of the sorghum-resistant starch that was created both before and after fermentation did not change, and no new chemical groups were produced. Other names for sorghum include durra, sorghum rice, sorgo, and so forth. From ancient times, it has been revered as "the essence of the five cereals and the king of grains." Given its high yield and great stress resilience in the face of growing population and rapidly dwindling fresh water supplies, sorghum, China's fifth food crop, has become extremely important to the national economy [4-6].

The majority of the carbohydrates in sorghum, up to 80%, are made up of starch. Sorghum starch is not as easily digestible as other cereals. The natural-resistant starch in sorghum regulates its digestibility; however the anti-nutrients like tannin in sorghum inhibit the digestion and absorption of sorghum starch. Due to its significant biological activity, resistant starch has garnered the interest of both local and international experts as an insoluble dietary fibre. Currently, research on corn, rice, wheat, and other crops is common; however, few studies have concentrated on sorghum-resistant starch [7]. China brags about having wide variety, plentiful sorghum resources, but the majority are used in the brewing and feed industries, which does not fully utilize the crop's economic potential. One of the main methods for improving food flavour, extending the range of uses for cereals, and increasing their utilisation rate is fermentation. Research findings in this area have shown that fermentation can improve the amount of sorghum amylose and its value for retro gradation. Moreover, it was noted that lysine, leucine, isoleucine, and methionine levels in sorghum increased significantly as a result of natural fermentation. As a result, the creation of sorghum-resistant starch through fermentation pre-treatment boosts its yield, broadens its uses, and raises its economic value in addition to giving it some physiological functions [8-10].

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