

COMMENTARY

PROBIOTIC POTENTIAL OF TRADITIONAL FERMENTED FOODS IN GHANA



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Fermentation is known to be one of the oldest technologies of preserving and producing food globally. Millions of people in developing countries have depended on fermentation to preserve their foods and improve its nutritional quality. In Ghana, the demand for fermented foods is increasing and this is especially the case during social events such as marriage ceremonies and funerals, and also during cultural events such as festivals. Traditional fermented foods play a major part in the socio-economic development in developing countries especially because traditional food fermentation enterprise has little or no entry barriers for women as it does not require the possession of expensive assets nor is it extremely physically demanding. Most women in rural developing countries are traditionally knowledgeable of fermentation processes and as such, it provides employment for women with little or no education. The fermentation enterprise is less labour intensive and allows women to combine domestic responsibilities and allow flexible working hours. This enables women to earn income for their families and most importantly for themselves and helps to enhance their role in the family homestead. However, not much has been done to upsurge and improve the quality of Ghanaian traditional fermented foods especially in aspects of functionality, safety and shelf life. Traditional Ghanaian fermented foods are often produced from different raw materials including cereals, milk, protein rich seed and legumes and to a lesser extent animal/fish protein. Few studies in Ghana on some fermented foods such as “*brukutu*” [1], “*fura*” [2], “*nunu*” [3], “*koko*”[4], “*pito*” [5] and “*kenkey*” [6] have reported on some functional microorganisms associated with fermentation. Amongst such functional organisms are Probiotics. Probiotics are live microorganisms which provide good health when consumed by improving the gut flora and modifying the host immune system. In 1994, the World Health Organization (WHO) stated that probiotics were the next most vital immune defence mechanism as a result of rising antibiotic resistance of Generally Prescribed Antibiotics (GRA). Probiotics are known for their ability to stimulate the growth of helpful microorganisms in the intestines, while inhibiting pathogen survival thereby improving the intestinal microbial equilibrium of the host and reducing lactose intolerance. They also help in the alleviation of symptoms of irritable bowel syndrome, colitis, alcoholic liver diseases and constipation amongst others. Probiotics also possess anti-carcinogenic, anti-mutagenic, anti-osteoporosis, hypo-cholesterolemic, anti-hypertensive and immuno-modulatory effects [7].

Nonetheless, considerable work is still needed to evaluate the probiotic potential of many other microorganisms associated with fermentation. Dairy fermented foods such as yoghurt have been reported to be one of the best medium for probiotics. Notwithstanding, few investigations have focused on potential probiotics from Ghanaian traditional fermented cereals such as millet, sorghum and maize which are a source of probiotic microorganisms although studies focusing on probiotics in these foods is still limited. In view of the enormous health, industrial and economic benefits associated with novel probiotic microorganisms, there is the urgent need to focus on research on elucidating the probiotic potential of microorganisms from Ghanaian traditional fermented foods. Cereal based fermented foods/drinks such as “*foroforo*”, “*koko*”, “*banku*”, “*kenkey*”, “*pito*”, “*brukutu*” and “*fura*”, which are all of Ghanaian origin could serve as templates for innovation where traditional starter cultures with probiotic properties are used as functional starter cultures for controlled fermentation processes for improved safety and health benefits .

As a research scientist, I want to engage in research activities that are aimed at characterization of the technological and functional properties of microorganisms associated with Ghanaian fermented foods. My research focuses on identifying and characterizing microorganisms associated with spontaneously fermented foods in Ghana and to evaluate their probiotic potential. I am currently working on identifying and characterizing microorganisms associated “*foroforo*”, a spontaneously fermented millet-based drink in Ghana and to evaluate the probiotic potential of the “*foroforo*” microbiota. This could help in the establishment of a microbial culture collection for food and industrial research in Ghana and Africa as a whole. It is also imperative to research such microorganisms and their role in food safety, human nutrition and health. Due to the increasing awareness for healthy living and the inclination to promote healthy indigenous foods, it is important to tailor research in developing healthy options through improved traditional processing methods.

REFERENCES

1. **Atter A, Obiri-Danso K and WK Amoa-Awua** Microbiological and chemical processes associated with the production of burukutu a traditional beer in Ghana. *International Food Research Journal*, 2014.
2. **Owusu-Kwarteng J** Molecular diversity and technological properties of predominant microorganisms associated with the processing of millet into fura, a fermented food in Ghana (Doctoral dissertation, University of Ghana). 2013.
3. **Akabanda F, Owusu-Kwarteng J, Glover R and K Tano-Debrah** Microbiological characteristics of Ghanaian traditional fermented milk product, Nunu. *Nature and Science*, 2010.
4. **Addo K, Lykins S and C Cotton** Indigenous fermentation and soy fortification: effects on protein quality and carbohydrate digestibility of a traditional Ghanaian corn meal. *Food chemistry*, 1996.
5. **Sefa-Dedeh S, Sanni AI, Tetteh G and E Sakyi-Dawson** Yeasts in the traditional brewing of pito in Ghana. *World Journal of Microbiology and Biotechnology*, 1999.
6. **Jespersen L, Halm M, Kpodo K and M Jakobsen** Significance of yeasts and moulds occurring in maize dough fermentation for ‘kenkey’ production. *International Journal of Food Microbiology*, 1994.
7. **Chiang SS and TM Pa** “Beneficial effects of *Lactobacillus paracasei* sub sp. *paracasei* NTU 101 and its fermented products”, *Applied Microbiology and Biotechnology*. Vol 93 2012.