4. Ready-to-Drink (RTD) Pearl Millet Porridge: Comparison of physico-chemical and nutritional profile between controlled and conventionally fermented porridges

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Abstract

The pearl millet is a major crop in the semi-Arid areas of Africa, especially in the Sahelian where food and nutrition insecurity is a constant threat. It is nutritionally superior in fat, fibre and minerals compared to other major cereals such as wheat, maize, sorghum and rice. Despite its important role in food security, it is under-utilized. The pearl millet is mainly used traditionally for the preparation of thin porridge. However, there is no ready-to-drink packaged and fermented pearl millet thin porridge in the market. In addition, traditional fermentation of cereal beverages is mainly by spontaneous or by back slopping. The arising product lacks consistency in quality. Further, porridges tend to undergo syneresis after storage. In addition, the porridges sold in Kenyan market are mainly presented in traditional guards, re-used cooking oil jerricans and re-used water bottles. This study aimed to determine the effect of fermentation (both conventional and controlled) on the physico-chemical and nutritional composition and to package the ready-to-drink porridge. The pearl millet was wet-milled, inoculated with the selected starter cultures and allowed to ferment at 30oC for 24 hours. Another batch of millet grains was wet-milled using a quern mill, left to ferment naturally at room temperature, and then cooked into thin porridge. The physicochemical properties (pH and TTA) were monitored hourly during controlled fermentation (0-10th, 23rd, and 24th hour). The study found that the pH of controlled fermented porridge decreased from 6.92 to 4.34, while its titratable acidity increased from 0.07 to 0.223%. The moisture, fat, and ash content of the controlled-fermented porridge were 91.62, 0.15, and 0.43% respectively. In comparison, traditionally milled porridge had moisture and ash contents of 87.5 and 0.47%, while industrially milled porridge had 88.85% moisture and 0.51% ash. In conclusion, the quality, physico-chemical and nutritional quality of controlled and conventionally fermented porridge are comparable.

***Keywords**: Pearl millet, controlled fermented porridge, spontaneous fermentation.*