

Influence of fermentation and other process steps on the folate content of a traditional African pearl millet based fermented food

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Folate deficiencies lead to different pathologies (neural tube defects, cancers, megaloblastic anemia...) and still occur in many countries. Cereal products are consumed in almost every country, and considering their folate content between 5 and 520 µg/100g fresh matter (FM), they could be interesting sources of folates. However, folates are sensitive to different factors such as light and temperature, so they can be lost during processing. Moreover, folates can be produced or consumed by microorganisms during fermentation, depending on the microbiota and the fermentation duration. A few studies quantified folates during the processing of cereal based fermented foods (CBFF), mainly fermented by yeasts. As far as we know, this has never been studied in a traditional CBFF fermented by lactic acid bacteria. The objective of this study was to quantify the evolution of the folate content during the preparation of a CBFF.

A pearl-millet based fermented gruel was investigated by reproducing an African traditional process, under controlled conditions. This traditional processing of pearl millet involves these steps: washing, soaking, grinding, kneading, sieving, fermentation and cooking. To monitor the folate content evolution, the total folate content was measured at each step of the process. There is a production of folate during the soaking step of pearl-millet (31% increase). Folate content decreased by 32% after sieving, due to removal of the outer layers of the kernels. There was also a slight decrease during the fermentation (depending on its duration) and the cooking step. The final folate content of the gruels was 2µg/100g FM, which is in the range of measurements made in traditional production units (0-3µg/100g FM), but lower than the expected theoretical value (2.7µg/100g FM) calculated from the folate content of the whole grain. These data will help us to establish strategies to implement an improved process in order to increase the folate content of CBFF.

Keywords: vitamin B9, *Pennisetum glaucum*, African food, nutrition, lactic acid fermentation

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