

Process Optimization and Microbial Quality of Provitamin A-Biofortified Amahewu, a Non-Alcoholic Maize Based Beverage

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Abstract : Provitamin A-biofortified maize has been developed to alleviate Vitamin A deficiency; a major public health problem in developing countries. Amahewu, a non-alcoholic fermented maize based beverage is produced using white maize, which is deficient in Vitamin A. In this study, the suitable processing conditions for the production of amahewu using provitamin A-biofortified maize and the microbial quality of the processed products were evaluated. Provitamin A-biofortified amahewu was produced with reference to traditional processing method. Processing variables were Inoculum types (Malted provitamin A maize, Wheat bran, and lactobacillus mixed starter culture with either malted provitamin A or wheat bran) and concentration (0.5 %, 1 % and 2 %). A total of four provitamin A-biofortified amahewu products after fermentation were subjected to different storage conditions: 4°C, 25°C and 37°C. pH and TTA were monitored throughout the storage period. Sample of provitamin A-biofortified amahewu were plated and observed every day for 5 days to assess the presence of Aerobic and Anaerobic spore formers, E.coli, Lactobacillus and Mould. The addition of starter culture substantially reduced the fermentation time (6 hour, pH 3.3) compared to those with no addition of starter culture (24 hour pH 3.5). It was observed that Lactobacillus were present from day 0 for all the storage temperatures. The presence of aerobic spore former and mould were observed on day 3. E.coli and Anaerobic spore formers were not present throughout the storage period. These microbial growth were minimal at 4°C while 25°C had higher counts of growth with 37°C having the highest colony count. Throughout the storage period, pH of provitamin A-biofortified amahewu was stable. Provitamin A-biofortified amahewu stored under refrigerated condition (4°C) had better storability compared to 25°C and 37°C. The production and microbial quality of provitamin A-biofortified amahewu might be important in combating Vitamin A Deficiency.

Keywords : biofortification, fermentation, maize, vitamin A deficiency

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