

South African Consumers' Attitudes; Sensory and Nutritional Analysis of Novel Nixtamalized Maize Products

Sandile Moagi, Carina Bothma, Alba Du Toit

University of the Free State, Bloemfontein, South Africa

Abstract

Maize is a staple crop that has a significant impact on food production in South Africa (SA). In SA, white maize is primarily used for human consumption whereas yellow maize is used for animal feed. Even though yellow maize is also safe and nutritious for human consumption. However, maize provides some nutrients in its bound form, making it unavailable to be absorbed in the human body. This study aimed to improve the acceptance of yellow maize for human consumption by increasing awareness of its safety as well as improving its nutritional profile through nixtamalization. Nixtamalization is the alkaline processing of maize, which involves cooking the grain in calcium hydroxide for 20 minutes and then leaving it to soak for a certain period. As a result, this helps improve the bioavailability of nutrients in maize and removes any present toxins. From this process, a product of corndogs was developed and evaluated by a consumer panel of 102 participants using a 5-point Just-About-Right (JAR) scale as well as a 9-point hedonic scale. The data was analysed using ANOVA and Spearman's correlation coefficient to provide an understanding of the panel's acceptance of the products as well as the potential of incorporating yellow maize into the human diet. The results of the JAR scaling revealed that certain flavours of the snack product were not well received by the consumer panel. The smoked paprika and sweet chilli flavoured corndogs were too bland, whereas the spicy masala flavour was described as not being sweet enough. Additionally, the cayenne pepper corn-dog sample was not gritty enough in mouthfeel for the consumer panel. Although the use of nixtamalization received a positive response from consumers, the results indicated a need to improve the flavour and texture profile of the products to gain overall consumer acceptance. The process of nixtamalization can be used extensively on other cereal grains such as wheat. Its successful introduction as a method that can also be practised at household level might help change the perception of yellow maize and help manage food and nutrition insecurities in low-income communities.