Effect of Nixtamalization on Calcium Content of Maize and Evaluate the Quality of Nixtamalized Maize Flour Biscuit

Nikita Bhusal

B. in Food Technology

College of Applied Food and Dairy Technology (CAFODAT), Kathmandu, Nepal

E-mail: bhusalnikita2050@gmail.com

Abstract

Maize or corn (*Zea mays* L.) is the third most consumed cereal crops worldwide for the sources of B-vitamins, thiamin, niacin, pantothenic acid, folate, dietary fiber and some essential minerals. Nixtamalization is a method to obtain maize flour or other flour from grains, in which the grain is soaked and cooked in an alkaline solution, usually limewater known as Calcium Hydroxide $Ca(OH)_2$, and hulled to enhanced the nutritional value of maize, especially for Calcium (Ca). The study was set up at College of Applied Food and Dairy Technology (CAFODAT) in 2016 to analyze the effect of nixatamalization in increment of Ca content in maize flour and biscuit at constant cooking time but varying steeping time: nixtamalization (6 hrs), nixtamalization (12 hrs), nixtamalization (18 hrs) and nixtamalization (24 hrs), including non nixtamalization (control measure) where all those five treatments were triplicated. The Ca content was analyzed by volumetric method. Later, proximate analysis of maize flour and biscuit was also carried out along with sensory evaluation of biscuit. The results showed that Ca content was significantly increased with increasing steeping time, consisting linear regression (R^2= 0.711, $p<0.05$). The Ca content was found maximum in nixtamalized (24 hrs) and minimum in non nixtamalized maize grains as 148 and 11.94 mg/100 gm respectively. Both the proximate analysis and sensory evaluation by panelists showed that nixtamalized (18 hrs) flour and its biscuits were found more acceptable than non-nixtamalized maize biscuits. Thus this study concludes that the bioavailability of Ca in maize can be increased by lime treatment.

Key words: Maize, Nutrition, Ca content, Food Quality, Nixtamalization