21st International Conference on

Food Technology & Processing

October 04-06, 2018 | London, UK

The nixtamalization of maize grains with infrared radiation, decreases the content of aflatoxins in tortillas

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In Mexico, one of the main foods is the tortilla, which is made with nixtamalized maize grains. The grain of this cereal is very susceptible to contamination by toxigenic fungi, such as *Aspergillus flavus,* which produces toxins (aflatoxins) with high mutagenic, genotoxic, teratogenic and immunosuppressive potential. The traditional nixtamalization process reduces aflatoxins when contaminated maize is processed, but presents ecological and nutritional problems. Alternatively, a Process of Nixtamalization with Infrared Radiation (PNIR) has been developed, which produces less solids in the nejayote and improves the texture and nutritional properties in the tortillas. In this work, the effect of the PNIR on the content of aflatoxins in tortillas produced with contaminated maize was evaluated. Grains with two levels of contamination were used of 173 and 370 ng aflatoxins/g sample, CA1 and CA2 respectively. The grains were nixtamalized with the PNIR, the dough was produced and tortillas were made. The final content of aflatoxins, in the tortillas was 50 ng/g for CA1 and 100 ng/g for CA2 (71 and 73% degradation) respectively. To estimate the final theoretical aflatoxin content, after PNIR and tortilla preparation, a linear regression was obtained based on the initial content of aflatoxins in the maize kernel. After this analysis, the aflatoxin extracts from the contaminated maize tortillas were acidified (pH=3) resulting in 4% more of aflatoxin reduction. With these results it is concluded that the PNIR is an effective process for the reduction of aflatoxins in tortillas made with contaminated maize.

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Journal of Food Processing & Technology
ISSN: 2157-7110

Food Technology 2018
October 04-06, 2018

Volume 9

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