

Title Development of a one-step test strip for rapid screening of fumonisins B1, B2 and B3 in maize

Author Yan-Song Li, Yu Zhou, Shi-Ying Lu, De-Jun Guo, Hong-Lin Ren, Xian-Mei Meng, Bai-Hui Zhi, Chao Lin, Zhe Wang, Xiao-Bing Li and Zeng-Shan Liu

Citation Food Control, Volume 24, Issues 1-2, March-April 2012, Pages 72-77

Keywords One-step; Test strip; Nanoparticle-McAb probe; Fumonisin

Abstract

Fumonisin (FBs), possible carcinogen to humans, are known to occur as a natural contaminant of corn worldwide. A monoclonal antibody (McAb) against FB1, which has high cross reactivity with FB2 and FB3 was produced and a nanoparticle-McAb probe was synthesized. Based on the probe, the one-step competitive immunochromatographic assay test strip for the rapid detection of total FBs (FB1, FB2 and FB3) was developed and applied to maize samples. The colour density of the test line is proportional to FBs mixture (FB1:FB2:FB3, 12:4:1) concentration in the range 2.5–40 ng mL⁻¹. The visual detection limit of FBs mixture spiked maize samples was found to be 2.5 ng mL⁻¹. The qualitative test based on the visual evaluation of results for FBs detection can be completed in 10 min. The performance of the assay is easy and convenient without the need of any instrumentation. The results demonstrated that the gold-McAb probe based strip could be used as a qualitative tool for rapid screening technique of FBs on-site.