

The Comparation of Limits of Detection of Lateral Flow Immunochromatographic Strips of Different Types of Mycotoxins

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Abstract : Mycotoxins are secondary metabolic products of fungi. These are poisonous, carcinogens and mutagens in nature and pose a serious health threat to both humans and animals, causing severe illnesses and even deaths. The rapid, simple and cheap detection methods of mycotoxins are of immense importance and in great demand in the food and beverage industry as well as in agriculture and environmental monitoring. Lateral flow immunochromatographic strips (ICSTs) have been widely used in food safety, environment monitoring. Forty-six papers were identified and reviewed on Google Scholar and Scopus for their limit of detection and nanomaterial on Lateral flow immunochromatographic strips on different types of mycotoxins. The papers were dated 2001-2021. Twenty five papers were compared to identify the lowest limit of detection of among different mycotoxins (Aflatoxin B1: 10, Zearalenone:5, Fumonisin B1: 5, Trichothecene-A: 5). Most of these highly sensitive strips are competitive. Sandwich structure are usually used in large scale detection. In conclusion, the mycotoxin receives that most researches is aflatoxin B1 and its limit of detection is the lowest. Gold-nanoparticle based immunochromatographic test strips has the lowest limit of detection. Five papers involve smartphone detection and they all detect aflatoxin B1 with gold nanoparticles. In these papers, quantitative concentration results can be obtained when the user uploads the photograph of test lines using the smartphone application.

Keywords : aflatoxin B1, limit of detection, gold nanoparticle, lateral flow immunochromatographic strips, mycotoxins

Conference Title : ICM 2021 : International Conference on Mycotoxins

Conference Location : Rome, Italy

Conference Dates : October 18-19, 2021