**TITLE OF ABSTRACT**

**[Title: uppercase, Arial, font size 12, centered]**

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**Abstract**

 (Not more than 300 words) (Arial, font size 12, justified)

**Keywords:** [5 words; Arial; font size 12; arrange alphabetically]

**BIOSENSOR TRENDS FOR THE DETECTION OF T-2/HT-2 MYCOTOXIN**

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**ABSTRACT**

T-2 and its metabolite, HT-2, is a trichothecene type A mycotoxin which can be found in moldy corn. This toxin, a by-product produced by *Fusarium* spp. fungus, is potent and very toxic to both humans and animals. Since mold-toxins are cheap and easy to obtain, T-2 toxin also posed a significant threat as biological warfare agent and mere few milligrams exposure of it can be lethal. The detection of T-2/HT-2 toxin could be either based on analytical instrumentation (quantitative) or screening (qualitative and semi-quantitative) methods. In recent decades, biosensors are gaining interest and popular in many industrial sectors (e.g. environmental, agriculture, healthcare and food) due to its simplicity (sample extraction), system stability, cheaper in terms of instrumentation and portability to be performed on-sites. In general, biosensor comprises of a biological-recognition element (e.g. enzyme-substrate and antibody-antigen) connected to a transducer or sensing device (e.g. electrical, optical, acoustic or thermal). We described here biosensor methods for the detection of T-2/HT-2 toxin, mainly optical and electrochemical biosensor. The first biosensor work on T-2 toxin detection was reported in 1989 using optical biosensor approach employing quartz fibre as a transducer and radio-labelled T-2 antigen. Direct detection of T-2 antibody and its specific T-2 toxin has been demonstrated by using total internal reflection ellipsometry (TIRE) supported by quartz crystal microbalance (QCM) method. A surface plasmon resonance (SPR)-based biosensor for T-2/HT-2 screening detection in corn-based baby food was performed in 2010. Work incorporated molecularly imprinted polymer (MIP) T-2 toxin using SPR also has been successfully addressed. In terms of electrochemical biosensor, multichannel electrochemical immunosensors (MEI) on 96-well screen-printed microplate has been reported using indirect detection of Ab-Ag format whereby signal generated was measured using intermittent pulse amperometry (IPA) technique. Labelless immunosensor for T-2/HT-2 detection also was recently found viable using electrochemical impedance spectroscopy (EIS) approach.

Keywords: biosensor, electrochemical biosensor, optical biosensor, T-2/HT-2 toxin, trichothecene mycotoxin