



Advances in the quest for new selective recognition elements for optical biosensors using phage display techniques

Maria Cruz Moreno-Bondi

Universidad Complutense de Madrid

The exceptional ability of epitope-mimicking peptides, or mimotopes, to imitate the epitope of an antigen and thus bind to same antibody paratope, presents an intriguing alternative to overcome some of the limitations of competitive immunoassays. Mimopeptides can be used as the competitor instead of the labeled antigen in applications where the conjugation of the target to a carrier molecule is challenging, or it can cause toxicity to the user. In this presentation I will discuss the development of mimotopes and various mimotope-based immunoassays for the detection of fumonisins and zearalenone, mycotoxins commonly found as natural contaminants in maize and other foodstuffs.

Mimotopes were selected from a phage-displayed peptide library, and after identifying the target specific clones for both mycotoxins, their epitope-mimicking nature was demonstrated in phage-based competitive immunoassays. As an alternative for the phage-borne peptide, recombinant fusion proteins, as well as the synthetic counterpart of the peptides, have been later developed and applied to the development of biosensing platforms for mycotoxin detection with excellent sensitivities.