Development of an antigen Enzyme-Lynked AptaSorbent Assay (ELASA) for the detection of Swine Influenza virus in field samples

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Abstract

Influenza viruses are highly variable pathogens that infect a wide range of mammalian and avian species. According to the internal conserved proteins (nucleoprotein: NP, and matrix proteins: M), these viruses are classified into type A, B, C, and D. Influenza A virus in swine is of significant importance to the industry since it is responsible of endemic infections that lead to high economic loses derived from poor weight gain, reproductive disorders, and the role it plays in Porcine Respiratory Disease Complex (PRDC). To the date, swine influenza virus (SIV) diagnosis keeps on being based in complex and expensive technologies such as RT-qPCR. In this study, we aimed to improved actual tools by the implementation of new bioreceptors molecules; aptamers. First, three different aptamers have been selected using the recombinant NP of Influenza A virus expressed in insect cells, as target. Then, these molecules have been used for the development of an Enzyme-Linked AptaSorbent Assay (ELASA) in combination with specific monoclonal antibodies for Influenza A detection. A total of 171 field samples (nasal swabs) have been evaluated with the newly developed assay obtaining a 79.7 % and 98.1 % sensitivity and specificity respectively, using real time RT-PCR as standard assay. These results suggest that the assay is a promising method that could be used for Influenza A detection in analysis laboratories facilitating surveillance labours.

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