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### DIVA tests for avian influenza, which antigen must be chosen?

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In last 15 years, numbers of ELISA test were developed to differentiate influenza infected from vaccinated animals (DIVA). In most of the test the either viral associated infection antigens or heterologous neuraminidase antigens were used to develop DIVA tests. One of the first attempts was non-structural 1 protein (NS1). The NS1-based ELISA was shown reliable results as a DIVA test in young chickens but the accuracy of NS1-based DIVA test decreases by the time and numbers of vaccination produces non-specific reactions. Nucleoprotein (NP) and conserved HA274-288 epitope were the others candidates for DIVA test but these two antigens did not show any values as DIVA ELISAs. By now the best antigen to develop DIVA-ELISA test is ectodomain of matrix 2 (M2e) protein. Relatively invariable nature of M2e protein across AIV strains and high level of expression of M2e protein on the surface of infected cells despite being low in copy number in mature virions are the main properties that make M2e a suitable candidate for DIVA tests. Our studies on structure of M2e showed the tetramer form of M2e shows higher sensitivity and specificity to discriminate M2e antibodies in sera of infected birds from vaccinated or non-vaccinated birds.

#### Biography

Farhid Hemmatzadeh has joined The University of Adelaide as a Senior Lecturer of Virology at the School of Animal & Veterinary Sciences in 2009. Previously, he was employed by Melbourne University since 2005 and Tehran University as an Associate Professor since 1997. He has over 20 years experience in research and teaching at the field of animal viral diseases including herpesviruses, pestiviruses, retroviruses, parvoviruses and influenza viruses. He has been involved in research, development and assessment of diagnostic test for animal viral diseases specially DIVA tests for poultry and large animals.

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