

Live attenuated vaccines tend to recombine with wild type virus: An example from infectious laryngotracheitis virus

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Infectious Laryngotracheitis (ILT) is an acute upper respiratory disease in poultry caused by a Herpesvirus. Clinical signs include conjunctivitis, respiratory rales, bloody mucus expectoration, difficulty breathing, weight loss and decrease in egg production, causing an important economic impact for the Poultry industry. Vaccination with live attenuated vaccines has been used for control of infectious laryngotracheitis (ILTV), however, there is emerging evidence of reversion to virulence of these vaccines, as well as recombination between wildtype and vaccine virus resulting in new recombinant ILTV strains of higher virulence. We **hypothesize** that amongst the Canadian ILTV isolates there are also recombinant viruses since ILT is endemic in backyard flocks in Canada and vaccines are used routinely for ILT control allowing co-circulation. The **objective** of this study is to molecularly classify and search for recombination evidence in 14 ILTV whole genome sequences originated from diagnostic samples of three provinces in Canada (Alberta, British Columbia and Quebec). The 14 Canadian ILTV sequences were analysed for potential recombination events using *Recombination Detection Program* (RDP4) software and Simplot analysis. Evidence of recombination was found in British Columbia ILTV isolate involving two ILTV vaccine strains (TCO-IVAX and CEO- LT BLEN). This analysis suggested that these two vaccine strains are potential parental strains of the British Columbia ILTV isolate. Another recombination event was found between a vaccine strain and an ILTV isolate from Alberta. These results show that the ILTV can recombine with vaccinal strains complicating vaccine-mediated control of ILT. Currently, pathogenicity evaluations of these ILTV isolates including the recombinant ILTV isolate are being carried out.