

## **Survival of Newcastle Disease Virus during Composting based on Virus Isolation and Real Time RT-PCR Methods**

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Composting has been considered as an alternative means for disposal of poultry carcasses and manure contaminated with Newcastle disease virus (NDV) and this study was to develop methods to measure the survival of NDV during composting. When egg fluids that contained NDV were inoculated into compost, the detection sensitivity was approximately 100 embryonic lethal doses (ELD<sub>50</sub>)/g of compost using virus isolation methods and 1000 ELD<sub>50</sub>/g using real time RT-PCR. To study NDV survival during composting, mixtures of moist chicken manure and wood shavings or corn silage were loaded into eight insulated compost bins, each of which contained about 0.3 m<sup>3</sup> of the mass. Specimens that each consisted of 20 g of test material contained within a mesh bag, were each inoculated with 10<sup>9</sup> ELD<sub>50</sub> of a vaccine strain of NDV. The test materials were manure from cage layers, used chicken litter, feed or egg fluids mixed into shavings or silage. Two specimens of each type were buried inside the compost bins at the bottom, middle and top levels and two were kept outside of the bins as controls. All specimens from two bins were tested for virus on each test date. On day 3, temperatures within compost ranged from 40 to 60 °C, and NDV was only detected in one manure specimen at the bottom of one bin where the temperature was 40 °C. On days 7, 10 and 21, no virus was detected in specimens from the remaining six bins. The ambient temperature for controls reached up to 28 °C, and NDV was detected in all control specimens on day 3 and in manure on days 7 and 10. These results suggested that the survival of NDV in the environment or during composting could be influenced by the type of material that contained the virus.

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