

## **Scoring system for lesions induced by different strains of Newcastle disease virus in chicken**

### **ABSTRACT**

Newcastle disease virus strains are velogenic, mesogenic, and lentogenic. This study aims to design a scoring system for lesions induced by different strains of Newcastle disease virus in chicken. Three experiments were conducted. In experiments 1 and 2, chickens were divided into infected and control groups. Infected groups of experiments 1 and 2 consisted of 6 and 24 specific pathogen-free (SPF) chickens, respectively. Control groups in experiments 1 and 2 consisted of 6 and 15 SPF chickens, respectively. In infected groups, infection was induced by intranasal administration of 10<sup>5</sup> 50% EID<sub>50</sub>/0.1 mL of velogenic Newcastle disease virus strain (vNDV). Infected chickens in experiment 1 were euthanised by cervical dislocation on days 3, 6, and 7 postinoculation (pi). Infected chickens in experiment 2 were euthanised at hours (hrs) 2, 4, 6, 12 and days 1, 2, 4, and 6 pi. Chickens of the control group in experiment 1 were euthanised on days 3 and 7 pi, whereas control group chickens in experiment 2 were euthanised on days 0, 1, 2, 4, and 6 pi. Then in experiment 3, 15 SPF chickens were divided into three groups; in the first group, 5 SPF chickens were infected with vNDV, in the second group, 5 SPF chickens were infected with lentogenic NDV (lNDV) (10<sup>3.0</sup> EID<sub>50</sub>/0.1 mL), and the third group was kept without infection as a control group. Chickens were euthanised on day 5 pi. In all previous experiments, tissues of brain, trachea, lung, caecal tonsil, liver, kidney, spleen, heart, proventriculus, intestine, and thymus were collected, fixed in 10% buffered formalin, embedded in paraffin, and sectioned. HS staining was applied. Tissues were examined under light microscope and changes were recorded. A scoring system was designed for lesions induced by different strains of NDV and, accordingly, lesions were scored. The scoring system was found helpful in the evaluation of disease severity.