

## **Evaluation of sprayed hypochlorous acid solutions for their virucidal activity against avian influenza virus through in vitro experiments**

Hypochlorous acid (HOCl) solutions were evaluated for their virucidal ability against a low pathogenic avian influenza virus (AIV), H7N1. HOCl solutions containing 50, 100 and 200 ppm chlorine (pH 6) or their sprayed solutions (harvested in dishes placed at 1 or 30 cm distance between the spray nozzle and dish) were mixed with the virus with or without organic materials (5% fetal bovine serum: FBS). Under plain diluent conditions (without FBS), harvested solutions of HOCl after spraying could decrease the AIV titer by more than 1,000 times, to an undetectable level ( $< 2.5 \log_{10} \text{TCID}_{50}/\text{ml}$ ) within 5 sec, with the exception of the 50 ppm solution harvested after spraying at the distance of 30 cm. Under the dirty conditions (in the presence of 5% FBS), they lost their virucidal activity. When HOCl solutions were sprayed directly on the virus on rayon sheets for 10 sec, the solutions of 100 and 200 ppm could inactivate AIV immediately after spraying, while 50 ppm solution required at least 3 min of contact time. In the indirect spray form, after 10 sec of spraying, the lids of the dishes were opened to expose the virus on rayon sheets to HOCl. In this form, the 200 ppm solution inactivated AIV within 10 min of contact, while 50 and 100 ppm could not inactivate it. These data suggest that HOCl can be used in spray form to inactivate AIV at the farm level.

