Identifying and Controlling the Spread of Salmonella Pathogens in the Poultry Industry

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A significant number of cases of Salmonellosis have been linked to the handling of the more than 50 million day old chicks sold annually from mail order hatcheries, suggesting the need for improved traceability and more efficient identification of Salmonella. A novel device was designed to allow users, without any specialized laboratory equipment or knowledge, to rapidly, reliably and cost effectively identify if their shipments of chicks have Salmonella, before exposing their family and home flocks to them. A portable, two chambered device was created that consists of a top chamber with a removable lid and vertically integrated syringe and a bottom chamber containing a rapid lateral flow immunoassay strip. To use the device, a sample is placed in a 50:50 broth and buffer solution in the top chamber; the integrated syringe is then used to accurately apply a measured sample to the strip in the lower chamber. The clear plastic bottom chamber allows the user to see the results safely, without having to open the device. Testing the device with a commercially available lateral flow strip reliably identified Salmonella in the faeces of day old chicks within 5 minutes and did not result in any false positives or negatives (n=6). This simple device allows users to quickly identify if shipments of chicks have Salmonella before exposing their family members and home flock to them, thereby lowering the incidence of Salmonellosis in families with home flocks and limiting the spread of Salmonella infections in human and poultry populations.

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