

Assay for SARS-Cov-2 on Chicken Meat

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Abstract : Reports appeared in 2020 about China detecting SARS-Cov-2 (Covid-19) on frozen meat, shrimp, and food packaging material. In this study, we examined the use of swabs for the detection of Covid-19 on meat samples, and chicken breast (CB) was used as a model. Methods: Heat inactivated SARS-Cov-2 virus (IV) from Microbiologics was loaded onto the CB, swabbing was done, and the recovered inactivated virus was subjected to the Machery & Nagel NucleoSpin RNAVirus kit for RNA isolation according to manufacturer's instructions. For RT-PCR, the IDT 2019-nCoV RUO Covid-19 test kit was used with the Taqman Fast Virus 1-step master mix. The limit of detection (LOD) of viral load recovered from the CB was determined under various conditions: first on frozen CB where the IV was introduced on a defined area, then on frozen CB, with IV spread-out, and finally, on thawed CB. Results: The lowest amount of IV which can be reliably detected on frozen CB was a load of 1,000 - 2,000 IV copies where the IV was loaded on one spot of about 1 square inch. Next, the IV was spread out over a whole frozen CB about 16 square inches. The IV could be recovered at a lowest load of 4,000 to 8,000 copies. Furthermore, the effects of temperature change on viral load recovery was investigated i.e., if raw unfrozen meat became contaminated and remains for 1 hour at 4°C or gets refrozen. The amount of IV recovered successfully from CB kept at 4°C and the refrozen CB was similar to the recovery gotten from loading the IV directly on the frozen CB. In conclusion, an assay using swabs was successfully established for the detection of SARS-Cov-2 on frozen or raw (unfrozen) CB with a minimal load of up to 8,000 copies spread over 16 square inches.

Keywords : assay, COVID-19, meat, SARS-Cov-2

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