Study on the efficacy and safety of the H5N8 highly pathogenic avian influenza A/Astrakhan/3212/2020 (IDCDC-RG71A) national stockpile vaccine (prototype)

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The Japanese government has been stockpiling a pre-pandemic vaccine for the highly pathogenic avian influenza virus (HPAIV) A/H5N1 since 2006. The National Action Plan for Pandemic Influenza and New Infectious Diseases, enacted in 2013, emphasizes the importance of this stockpile in preparation for potential future outbreaks. According to the vaccination guideline prepared based on the plan, in the event of a novel influenza outbreak, the strain of the virus with the highest expected efficacy should be selected from the stockpile. Additionally, cross-reactivity should be assessed using serum from those who received pre-pandemic vaccines, ensuring efficacy against the circulating virus.

In 2023, the Health and Sciences Council's joint subcommittee on influenza countermeasures and vaccines agreed to produce the active pharmaceutical ingredient and partial formulation of vaccines for HPAIV A/Astrakhan/3212/2020 (IDCDC-RG71A) of Clade 2.3.4.4b. During a pandemic, marketing authorization will be expedited for each vaccine strain. It is important to note that, as the formulated national stockpile prototype vaccines are not licensed products during non-epidemic periods, there is no experience in administering them to humans. The past clinical trials, including investigator-initiated trials, with H5N1 and H7N9 vaccine strains, have revealed that the immunogenicity differs between strains. Also, extrapolation using non-clinical studies with ferrets has proven difficult. These factors underscore the need for clinical trials and their data. Also, it is crucial to preserve the remaining serum for the future examination of cross-immunity with epidemic strains and vaccine efficacy when HPAIV outbreaks occur.

In light of these considerations, this study is conducted as an open-label phase II investigator-initiated clinical trial with the following objectives: 1) to assess the efficacy and safety of pre-pandemic vaccines stockpiled under the National Action Plan for Pandemic Influenza and New Infectious Diseases, in line with the Act on Special Measures against Novel Influenza, etc., 2) to store serum samples from pre-pandemic vaccine recipients at the National Institute of Infectious Diseases (NIID) to explore cross-immunity using the serum in the event of a novel influenza outbreak, and 3) to compare the immunogenicity of other modalities of novel influenza vaccines using the stored serum.

In addition to evaluating the stockpiled vaccine's efficacy and safety, storing the remaining serum at NIID will enable future studies on cross-immunity with epidemic strains and HPAIVs. Moreover, comparisons with mRNA and recombinant vaccines currently under development will enhance countermeasures against emerging influenza strains.