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Preparedness for the emergence of pandemic influenza viruses -Avirulent avian viruses as vaccine strains against pandemics-

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In the influenza H 5 N 1 virus incident in Hong Kong in 1997, viruses that are closely related to H 5 N 1 viruses initially isolated in a severe outbreak of avian influenza in chickens were isolated from humans, signalling the possibility of an incipient pandemic. However, it was not possible to prepare a vaccine against the virus in the conventional embryonated egg system because of the lethality of the virus for chicken embryos and the high level of biosafety required for vaccine production. Alternative approaches, including an avirulent virus A/duck/Hokkaido/67/96 (H 5 N 4) isolated from a migratory duck in Hokkaido, Japan as a surrogate virus, H 5 N 1 virus as a reassortant with an avian virus A/duck/Hong Kong/301/78 (H 7 N 1), and an avirulent recombinant H 5 N 1 virus generated by reverse genetics, have been explored. All vaccines were formalin inactivated. Intraperitoneal immunization of mice with each of vaccines elicited the production of hemagglutination-inhibiting and virus-neutralizing antibodies, while intranasal vaccination without adjuvant induced both mucosal and systemic antibody responses that protected the mice from lethal H 5 N 1 virus challenge.

Preparation of monoclonal antibodies for etiological diagnosis of viral infections

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Influenza A viruses infect mammals including humans and a variety of birds. A proposed mechanism of the emergence "new" human pandemic influenza viruses, which cause pandemics of influenza, is that they are genetic reassortants between human and avian viruses. To provide information on the future pandemic strains, surveillance of animal influenza is essential. In 1997 in Hong Kong, 18 people were infected with a highly virulent H 5 N 1 avian influenza virus and 6 died. If such a highly virulent virus of H 5 or H 7 hemagglutinin (HA) aquires transmissibility among humans, a disastrous pandemic must occur.

In the present study, monoclonal antibod-