Research and Development of the Influenza Vaccine

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ABSTRACT

Today's influenza vaccines are prepared in fertilized chicken eggs, a traditional method that has been used for nearly 50 years. The chicken egg-based system is still considered the most reliance and well-established production process so far. However, this production cannot provide immediately supply of vaccines, as a new strain of influenza virus is break out. Thus, many researchers have studied in the relevant field to increase the vaccine production in terms of effectiveness, safety and an acceptance of medical/pharmaceutical market. The current production of flu vaccine approach is the use of influenza viruses that are injected into the chicken embryo and replicated. The infected embryo is then go through the process of incubation, concentration, purification, inactivation and formulation, and finally the bulk of vaccines are produced. The method has demonstrated both matured vaccine-production process and cost-effective. However, egg protein allergy, availability of embryo supply, time-consuming production and limitation of biotechnology development are its disadvantages. In recent years, there are some improvement and development in vaccine manufacturing, including cell culture, DNA vaccine, and an immune adjuvant. They all have common characteristics such as shortening of preparation time, suitable against widespread viruses and more flexible schedule of production. However, it still remains some technical difficulties that needed to be overcome when mass productions of vaccines are scale up into manufacture. In the future, there are some concepts in manufacturing technique of influenza vaccine, including reverse genetic techniques, universal vaccine, food-based vaccine and the vaccine mired in tape, which are expected that will improve the method of vaccination, pared-down and shortening of manufacturing process, and increase the protency after vaccination. Hopes of the influenza vaccine will be applied more economically, widely and safely in the countries that need the vaccination. Key Words: Influenza vaccine, Embryo egg, Cell culture.

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