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Chitosan as an adjuvant for preparation of inactivated influenza vaccine

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Influenza A viruses infects a wide range of animal species and human. Among the avian influenza virus (AIV) subtypes, H9N2 would be used for rapid intervention should be safe to use and highly effective after a single administration. Chitosan microparticles have already been proposed as a new adjuvant in inactivated avian Influenza (H9N2) vaccine immunization. Virus has the potential to cause an influenza pandemy and vaccination is a common solution for this problem. The aim of the present work was to investigate the potential utility of chitosan microparticles as new parenterally vaccine delivery vehicles.

For this purpose, chitosan microparticles were prepared according to a modified ionic gelation method and inactivated antigen was loaded in 1 HAU concentration. Loading capacity of microparticles was determined by Hemaglutinization (HA) method. ISA70 vaccine as a standard adjuvant with same loading size was used in beside. For vaccine-antibody response assay, different volumes of prepared vaccines (0.2, 0.4 and 0.6 ml) were injected via subcutaneous rout in 21-days-old specific pathogen free cheekiness. Vaccine induced AIV-specific antibodies after single vaccination, measured at 6 weeks after vaccination with Hemagglutinin Inhibition (HI) and ELISA methods.

Elisa and HI Log 2 total mean titer of chitosan groups were significantly increased in 3 weeks after vaccine administration ($p<0.05$). No significant deference were seen in titer of antibody between various volume of injection ($p>0.05$). Titer of ISA70 experimental vaccine in mentioned preparations condition was not reasonable.

So, these kinds of vaccines induce appropriate antibody titers after a single immunization and with a low dose of antigen. Also, chitosan microparticles represent an interesting new platform for antigen delivery and a promising adjuvant candidate for H9N2 inactivated influenza vaccine.

Keywords: Chitosan, microparticle, adjuvant, influenza, virus, ELISA

Biography

Iraj Khalili is Director Manager at Razi vaccine and serum research institute. He graduated at DVM in 1995. He started his job at Razi Company in 1997 in field of pharmaceutical and vaccine producing. There are more than 60 biological productions in field of veterinary and medicine. He is incharge of Razi vaccine and serum research institute (Northwest) branch since 2007. He is planning his Ph.D. pre-defence at ANUA in Armenia.

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