BioSpectrum
the business of Bio & Health Sciences
ASIA EDITION

mRNA vaccines can protect against influenza virus

November 26, 2012 | News | By BioSpectrum Bureau

mRNA prophylactic vaccines can protect against influenza virus, shows study



Singapore: Messenger (m)RNA vaccines (RNActive), which is based on RNA technology platform and has been developed by CureVac, have the potential to provide effective protection against infectious diseases, says German Federal Research Institute for Animal Health and Friedrich-Loeffler-Institute (FLI), Germany. CureVac is a Frankfurt-based clinical stage biopharmaceutical company.

In vivo data published by CureVac and the Friedrich-Loeffler-Institute online in *Nature Biotechnology* show that mRNA vaccines induced balanced, long-lived and protective immunity to influenza A virus infections in various animal models. It is also shown that the production of RNActive vaccines is highly flexible. Thus, RNActive vaccines can be rapidly supplied for a variety of virus strains and subtypes identified in response to pandemic scenarios.

"The findings and results from a very fruitful collaboration with our colleagues from the renowned Friedrich-Loeffler-Institute underscore the medical potential of mRNA beyond cancer immunotherapy and validate the capacity of our RNActive vaccines to prevent infectious diseases," said Dr Ingmar Hoerr, chief executive officer, CureVac. "The synthetic nature of our RNActive vaccines reduces production time dramatically and allows for sequence-matched vaccines that can be produced quickly and reliably in a scalable process. Additionally, our vaccines can be stored at room temperature, thereby avoiding the cold-chain in contrast to all other vaccines on the market and making worldwide distribution of our vaccines logistically and financially attractive."

Mr Lothar Stitz, head of Institute of Immunology, FLI, Greifswald, Germany, and one of the corresponding authors of the publication, said, "Our data highlight the potential and advantages of prophylactic mRNA-based vaccines and make immunization against a broad range of pathogens possible. We have a significant need for improved technologies that could be rapidly adapted to match circulating strains and allow efficient, large-scale production if necessary. In particular, we ultimately need a broadly protective vaccine against influenza. Thus, these mRNA vaccines overcome the draw-backs of many other prophylactic vaccination methods including DNA-based approaches that can have insufficient clinical efficacy or safety and may cause residual vector immunogenicity."

Additional data revealed that full protection was achieved upon single-dose immunization against influenza A/PR8 with a multi-component HA and NA mRNA vaccine. Furthermore, mRNA vaccines provided heterologous protection; vaccination with PR8 nucleoprotein (NP) mRNA led to protection against homologous PR8 (H1N1) or heterologous MB1 (H5N1) virus. Moreover, mRNA vaccines provided immunogenicity in ferrets, the animal model of choice for preclinical proof-of-concept studies in influenza research, and pigs compared to a licensed trivalent vaccine of corresponding specificity.