Universal flu vaccine being tested on humans

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A universal influenza vaccine that has been pioneered by researchers from VIB and Ghent University (Belgium) is being tested for the first time on humans by the British-American biotech company Acambis. This vaccine is intended to provide protection against all 'A' strains of the virus that causes human influenza, including pandemic strains.

Influenza is an acute infection of the bronchial tubes and is caused by the influenza virus. Flu is probably one of the most underestimated diseases: it is highly contagious and causes people to feel deathly ill. An average of 5% of the world's population is annually infected with this virus. This leads to 3 to 5 million hospitalizations and 250,000 to 500,000 deaths per year. In Belgium, an average of 1500 people die of flu each year. A 'more severe flu year' - such as the winter of 1989-1990 - claimed in our country 4500 victims.

Besides the annual flu epidemics, there is the possibility of a pandemic, which occurs every 10 to 30 years and causes more severe disease symptoms and a higher mortality rate. During the pandemic caused by the Spanish flu in 1918-1919, the number of deaths worldwide even rose to over 50 million.

Today's flu vaccines need to be adapted every year and, consequently, they must also be administered again every year. The external structure of the flu virus mutates regularly, giving rise to new strains of flu. Due to these frequent mutations, the virus is able to elude the antibodies that have been built up during a previous infection or vaccination. This is why we run the risk of catching the flu each year and also why a new flu

vaccine must be developed each year. A universal flu vaccine that provides broad and lifelong protection - like the vaccines we have for polio, hepatitis B or measles - is not yet available.

In the 1990s, VIB researchers connected to Ghent University, under the direction of Prof. Emeritus Walter Fiers, invented a universal flu vaccine. One protein on the surface of the influenza virus, the so-called M2 protein, remains unchanged in all human flu viruses known, including the strains that caused the pandemics in the last century. On the basis of the M2-protein they developed a vaccine and successfully tested it on mice and other laboratory animals: the M2 vaccine provided total protection against 'A' strains of flu, without side effects. Furthermore, this universal influenza vaccine is the first example of a vaccine inducing a protective immune response that normally does not occur in nature, for example following infection by a virus or a bacterium.

Acambis - a biotech company that specializes in the development of vaccines - has been exclusively licensed rights to VIB's flu vaccine patent portfolio and has entered into a collaboration with VIB for further development work. At the moment, Phase I clinical trials on humans are underway - that is, the candidate vaccine is being administered to a small group of healthy people in order to verify the safety of the product and to provide an initial insight into the vaccine's effect on the human immune system.

Xavier Saelens, Prof. Emeritus Willy Min Jou, and Prof. Emeritus Walter Fiers are leading the fundamental research forward with respect to protection against influenza epidemics and pandemics. This involves, amongst other, supporting research required for the planned Phase II and III clinical trials. Through their collaboration with Acambis, they hope that annual flu vaccines can ultimately be replaced by the new, universal flu vaccine. The goal for this vaccine is that two inoculations would

suffice to protect people against all ‘A’ strains of flu.

Source: VIB, Flanders Interuniversity Institute of Biotechnology