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A genetically engineered flu vaccine made in caterpillar cells is as effective as traditional vaccines and can be produced more efficiently, according to a preliminary study released Tuesday.

This experimental method could make more vaccine per batch than the traditional method, which uses hens' eggs, and shave about a month off production time, said study leader Dr. John J. Treanor, a researcher at the University of Rochester in New York.

``When we're talking about a scenario where every day makes a difference, saving even a week or two weeks is a big plus,'' he said.

Recent concerns about the deadly H5N1 bird flu virus mutating into a form that could spark a human pandemic have increased the urgency of finding new manufacturing techniques, researchers said.

Currently, all flu vaccines licensed in the United States use eggs and take six to eight months to produce and distribute.

The egg-based method is vulnerable to contamination -- the cause of a massive shortage of flu vaccines in the U.S. in 2004. Cell-based vaccines are thought to be less vulnerable.

The makers of the experimental vaccine, Protein Sciences Corp. of Meriden, Conn., altered an insect virus to produce a human version of a flu protein capable of sparking an immune response. The virus was grown in caterpillar cells, which are relatively easy to manipulate.

``This is promising technology,'' said Dr. Arnold S. Monto, a University of Michigan infectious diseases researcher who was not involved in the study. ``This is really the first of a number of different vaccines which are innovative and different.''

At least five companies are working on cell-based flu vaccines. The Department of Health and Human Services awarded more than $1 billion for research in this area in 2006 to GlaxoSmithKline, MedImmune Inc., Novartis, Baxter International Inc. and Solvay Pharmaceuticals.

Protein Sciences has been developing the insect-based vaccine for about 20 years. The vaccine is on track for accelerated approval with the Food and Drug Administration and could be on the market by next year, said company president Dan Adams. *He is a lawyer who co-founded Biogen.*

The latest study, published in the Journal of the American Association, tested the vaccine's safety and effectiveness in preventing flu during the winter of 2004 to 2005.

About 460 healthy adults were split into three groups: high-dose vaccine, low-dose vaccine and placebo, according to the company-funded study.

Like typical winter flu vaccines, the experimental vaccines used proteins from three flu strains picked annually by the FDA.

The patients were followed for 180 days. Of the 301 people who received a shot of the vaccine, two came down with full-blown flu. Seven of the 153 people who received a placebo injection were diagnosed.

The 86 percent protection rate in the experimental vaccine group was about as good as the standard vaccine that season, which another study found to be 77 percent effective, Treanor said.

Dr. Robert Belshe, who directs the Vaccine Center at Saint Louis University in Missouri, said he was impressed by the safety of the vaccine, which had relatively few side effects.

``If a larger trial confirms the data in this trial, I think we have an important advance,'' said Belshe, who was not involved with this trial, but has previously worked as a consultant to Protein Sciences on other vaccines.