BioSpectrum
the business of Bio & Health Sciences
ASIA EDITION

Ebola cure depends on biotech drug ZMapp

August 7, 2014 | News | By BioSpectrum Bureau



Strange as it may sound, the dreaded tobacco plant blamed for millions of deaths of cigarette smokers could emerge as the savior in producing the only working cure against Ebola. A small American biotech company, Mapp Pharmeceuticals, based in San Diego, California, had made available the "secret serum" the new drug ZMapp, along with another similar drug made by Canadian company Defyrus, is the only hope now to combat the deadly Ebola virus which has claimed more than 1000 lives so far in West African countries.

The drug cocktail, ZMapp was administered a few days ago to two heath workers, Mr Kent Brantly and Ms Nancy Writebo, who contracted the disease while treating patients in Sierra Leone, after they were flown to the US for emergency treatment. Experts said the drug seemed to be working very well.

According to a report in The New York Times, the US regulator, Food and Drugs Administration (FDA) has given special permission to use the drug, which is a cocktail of Mapp and Defyrus, as a special gesture to treat the two Ebola victims. The drug has been tested only on monkeys so far but because it showed early promise of emerging as a definitive cure, the regulator has fast-tracked the experimental use of this drug.

The drug uses a new method of passive immunization to treat Ebola infection. Antibodies are extracted from infected patients and then induced into mice. The Ebola protein is then genetically altered and then inserted into tobacco leaves through a unique method developed by a German company, Icon Genetics. The antibodies are then inserted into tobacco leaves using this technology and grown in large numbers for extraction.
The antibodies against the Ebola virus are then administered to patients to develop immunity to tackle the disease.

Mapp is a small biotech company employing just nine scientists. Set up in 2003, the company has been quietly working in the field of biological warfare related fields for the US Defence Department. It was founded by ex-John Hopkins University faculty, Mr Larry Zeitlin and Dr Kevin J Whaley.
The company has used the tobacco leaves method of production to produce large quantities of the drug more quickly than the conventional method of using mammalian cells.

According to The New York Times, the US government has requested Caliber Biotherapeutics, based in Texas, to assist with the large scale production of ZMapp.

ZMapp was to have been tested on healthy human volunteers in 2015. The sudden outbreak has speeded up the process and trials may be advanced now due to the global emergency. The Canadian company Defyrus too has developed a similar drug and the scientists decided to use a cocktail of the products from both Defyrus and Mapp to try it on the two infected healthcare volunteers.