

## Indian origin scientist helps make cheap vaccines

An Indian American scientist has made a breakthrough in research that will help make certain vaccines much cheaper and ideal for people in poor countries.

Henry Daniell of the University of Central Florida's Burnett College of Biomedical Sciences has found a way to genetically engineer plants to make large amounts of certain vaccines, according to the Voice of America (VOA).

Daniell's research, according to the report, would help produce oral vaccines at a fraction of the usual cost, making them affordable to millions.

'A third of the world population, or two billion people, earn less than two dollars a day. And a 26,000-40,000 dollar treatment is unimaginable for that population,' the report in VOA's website quoted Daniell as saying.

'So even though treatments are available, they're beyond their reach. And now, through oral delivery, it is possible for (people), no matter where they live, to get this treatment in an affordable manner.'

According to the report, scientists first inject plants, like tobacco, lettuce or carrots, with vaccine genes. These are then planted in a greenhouse before being crushed and put into capsules to be taken by patients.

The method does away with a number of traditional processes involved in producing the therapeutic proteins needed to make vaccines, thus making final product a whole lot cheaper.

Tests in mice have been successful and it is even believed that there are fewer side effects than with traditional vaccines.

The US government, the report said, is even hoping that such vaccines would one day help fight bio-terror threats like anthrax.

'The next step is human clinical trials. And in the case of bio-terrorism vaccines, these are on fast-track approval,' Daniell said.

'And so in those cases we have found additional support in the US. It is extremely expensive - it costs 300 to 400 million dollars to do these clinical trials.'

He said that his new system would develop vaccines for waterborne pathogens like cholera, amebiasis, viruses like aura virus, besides checking anthrax and plague.

'All of these vaccines have already been developed. We are also in the process of developing vaccines for malaria and tuberculosis,' he said.

The US government, including the National Institutes of Health, has provided \$3 million to fund the research.

Daniell said the main motivation behind the research was the impact of diseases he saw on poor people in India.

Born and educated in India, he moved to the US as a post-doctoral fellow at the University of Illinois, Urbana-Champaign, in 1980. Since then he has served on the faculty of Washington State University, University of Idaho, Auburn University and at the University of Central Florida where he heads the laboratory named Daniell Lab.

The Daniell Lab is known for gene expression studies in different cellular compartments of microorganisms and higher plants. Areas of interest include vaccines, pharmaceutical and anti-microbial proteins as well as herbicide, insect and disease resistance.

Daniell has published over 150 research articles, which are cited in scientific literature over 1,500 times. He also founded a biotechnology company called Chlorogen and has more than 75 patents (awarded or in prosecution) in the US and abroad to his credit.

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