GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
RAJYA SABHA
STARRED QUESTION NO.259
TO BE ANSWERED ON 14/03/2011

NEEDLELESS DRUG DELIVERY DEVICE OF IISc.

*259. SHRI A. ELAVARASAN**:**

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether the scientists at the Indian Institute of Science (IISc) have designed a technology, a pen shaped needleless drug delivery device, that uses supersonic shock waves for the painless delivery of medicines into the body;
(b) if so, the details thereof;
(c) whether IISc is the only organization that has developed such a device in the world using supersonic shock wave technology; and
(d) if so, the details thereof?

ANSWER

MINISTER OF PARLIAMENTARY AFFAIRS; MINISTER OF SCIENCE AND TECHNOLOGY AND MINISTER OF EARTH SCIENCES.
(PAWAN KUMAR BANSAL)

(a) to (d): A statement is laid on the Table of the House.

STATEMENT AS REFERRED IN REPLY TO PART (a) to (d) OF RAJYA SABHA STARRED QUESTION NO.259 FOR 14.03.2011 REGARDING "NEEDLELESS DRUG DELIVERY DEVICE OF IISc."

(a) & (b) Yes, Sir. The scientists at Indian Institute of Science (IISc.), Bangalore have developed a needleless vaccine delivery system and successfully delivered Typhoid vaccine into mice in the laboratory. This new method has been developed based on the collaborative work between the Laboratory for Hypersonic and Shock Waves, Department of Aerospace Engineering and Microbiology and Cell Biology Department of Indian Institute of Science. This new method of drug delivery is in its early stage of development and it needs to go through more scientific studies for device prototype development, clinical validation and regulatory approval before the device is commercially available for human use.

(c) & (d) Yes, Sir. IISc is the only organization which is using shock waves generated through micro-explosions that travel at supersonic speed for needleless drug delivery. This method utilizes the instantaneous mechanical impulse generated by micro blast waves to achieve sub cutaneous delivery of vaccines into mice. The micro blast wave is generated inside a small disposable plastic tube (3 mm diameter) using negligibly small amount of chemical energy (few Joules). Appropriate mechanical fixtures (disposable) are used to transfer the mechanical impulse to push the liquid drug to depths of ~100 microns below the skin of the mice.

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