

**GOVERNMENT OF INDIA
HUMAN RESOURCE DEVELOPMENT
LOK SABHA**

UNSTARRED QUESTION NO:6698
ANSWERED ON:08.05.2013
DRUG DELIVERY DEVICE
Pakkirappa Shri S.

Will the Minister of HUMAN RESOURCE DEVELOPMENT be pleased to state:

- (a) whether the scientists at the Indian Institute of Science (IISc) have designed 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 organisation that has developed such a device in the world using supersonic shock wave technology; and
- (d) if so, the extent to which it is beneficial?

Answer

MINISTER OF STATE IN THE MINISTRY OF HUMAN RESOURCE DEVELOPMENT (DR. SHASHI THAROOR)

(a): Yes, Madam.

(b): The scientists at the Indian Institute of Science have designed and successfully tested a new concept of needleless vaccine delivery system in the laboratory. This new method has been developed based on the collaborative work between the Laboratory for Hypersonic and Shock waves, the Department of Aerospace Engineering, and the Microbiology and Cell Biology Department of the Indian Institute of Science. Using the new technique, typhoid vaccines have been successfully delivered into mice in the laboratory. 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 a negligible amount of chemical energy. Because the depth of penetration of drug below the skin is very small the animals during vaccine delivery do not experience a great deal of pain. The animal trials have shown that by using this method a lesser quantity of vaccines is sufficient to provide resistance to animals against infection when compared to conventional methods.

(c): Yes, Madam.

(d): It has multiple advantages such as being painless easily portable, completely disposable, safe and very economical.