OUT-OF-BOX STERILISATION TECHNIQUE

IIT-K makes a 20-min breakthrough

THE WONDER BOX KILLED the stubborn E coli bacterium in record time during a test run

aurav Saigal
gaurav.saigal@hindustantimes.com

ANPUR: Just twenty minutes nd the IIT-K's vanity-box size terilizer will make contents erm-free!

Usually, the process takes 40 o 45 minutes in the heavy-bod-ed, big-size sterilizers used n hospitals. The Indian Institute f Technology (Kanpur) boys re soon going to patent the rototype model. The test runs howed good results.

The box even successfully illed the stubborn Escheriacoli – a gram-negative bacterium, which is known for their strong cellwall, heat resistance and resilience.

"The next step will be to try and kill other widespread bacteria and virus found inside operating theatre and design a bigger version to suit different operative needs," says Dr Anupam Pal, assistant professor at the department of Biological Sciences and Bioengineering at IIT-K.

"Sterilizing small instruments can be done inside a box but to sterilize an orthopaedic implant like hip or knee replacement it requires a bigger sterilizer," he said.

The hospital-based sterilization requirement was studied by three IIT students Ankit Sachan, Vikas Pandey and Abhishek Singh at CSMMU in association with Dr Ajai Singh, Dr Santiosh Kumar and Dr Sachin Awasthi who had teamed up with Dr Pal to design sterilizer.The IIT-K sterilizer is portable and can run on a battery in rural areas where power is a distant dream. The traditional ones don't have that option.

And now the most important thing. The IIT-K's scientific excellence is affordable too—it will cost a doctor only Rs 28, 000 to 35,000. That is a big relief as compared to the present cost range of sterilizers—Rs 1 lakh plus."But, the best part is timing. Within 20-munites it can cater to any emergency need that often arises when an equipment or implant falls on the ground during operation. It needs immediate sterilization " says Prof RN Srivastava of the Orthopaedic department at Chhatrapati Shahuji Maharaj Medical University (CSMMU),Lucknow.

The key feature of this sterilizer is it makes use of a rare combination of chemical and plasma. Conventional sterilizers come in different versions of chemical base, heat based and radiation.While chemical based sterilizer has limited penetration and leaves toxicresidue the heat-based model is time consuming and radiation based version causes material degradation, Prof Srivastava said.

HOW IT WORKS

- The electricity required only to make steam in a conventional sterilizer is enough to operate this sterilizer
- Electronically generated electrons are directed on the opposite side to the cathode while the objects to be sterilized are placed in between
- Thus bacteria and virus falling on waybreak with high electric collision.
- Principle involved is electron flow

THE EDGE

- Its portability - with just a desiccated case and a vacuum pump - allows its carriage to remotest areas where even electricity might not be available
- It can run on a battery that supports an 80-watt vacuum pump
- While conventional sterilizer produced toxic elements as by products this one gives out water (H2O)