

## **SCTIMST scientists design super absorbent material for safe management of infected respiratory secretions**

Scientists at Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST) an autonomous institute under the Department of Science and Technology (DST), Govt of India have designed and developed a highly efficient superabsorbent material for liquid respiratory and other body fluid solidification and disinfection for the safe management of infected respiratory secretions.

The material titled 'Chitra Acrylosorb Secretion Solidification System', developed by Dr. Manju S and Dr. Manoj Komath of the department of Biomaterial Science and Technology of the Biomedical Technology wing of SCTIMST is a highly efficient superabsorbent material for liquid respiratory and other body fluid solidification and disinfection.

Professor Ashutosh Sharma, Secretary, DST, said, "Safe disposal of infected secretions from the patients in a variety of infectious conditions is of paramount significance. A super-adsorbent gel with embedded disinfecting material is thus an attractive proposition for the safe collection, consolidation, and quarantine of secretions before their incineration."

AcryloSorb can absorb liquids at least 20 times more than its dry weight and also contains a decontaminant for in situ disinfection. Containers filled with this material will immobilize the contaminated fluid by solidifying it (gel-like), thus avoiding spillage and will also disinfect it. The canister containing the solidified waste canister can then be decomposed as all other biomedical waste by incineration. This technology reduces the risk for the hospital staff, the need for personnel for disinfecting and cleaning the bottles and canisters for reusing them and makes the disposal safer and easier.

In the developed system, suction canisters, disposable spit bags have been designed with "AcryloSorb" technology. They are lined inside with the AcryloSorb material. The AcryloSorb suction canisters will collect the liquid respiratory secretions from ICU patients or those with copious secretions treated in the wards. The container will be spill-proof and can be sealed after use, making it safe and fit for disposal through the usual incineration system for biomedical wastes. Sealable and disposable AcryloSorb spit bags are provided for solidifying the sputum and saliva of ambulant patients with respiratory infections, which can then be incinerated.

Disposal of infected secretions from patients poses a great challenge to every hospital. This is particularly so in the case of secretions of patients with highly contagious diseases such as COVID-19. The collection and disposal of such wastes put the nursing and cleaning staff at high risk.

Generally, in the ICU, the secretions are sucked by a suction machine into bottles or canisters, which have to be emptied when full, subjected to a decontamination process in a sluice room and discarded through the waste fluid disposal systems. Apart from the re-contamination risk during the handling involved in these processes, there is a need for well-equipped sluice rooms with disinfection facilities, which can be an issue in less well-equipped hospitals or makeshift isolation wards during epidemics. The superabsorbent material can be effective in the safe management of infected respiratory secretions.

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*Fig: Suction canister with acrylosorb*



*Fig: Disposable spit bag with acrylosorb*