

# National Institute of Cholera and Enteric Diseases (NICED), Kolkata

## Cholera Vaccine

**Product/Process:** Oral recombinant live strain VA1.3.

**Application/Uses:** *Vibrio cholerae* O1 biotype E1 Tor serotype Inaba strain genetically tailored to develop a novel non-reactogenic oral recombinant live oral cholera vaccine strain and named VA1.3.

**Salient Technical Features:** Initial attempts were made by parenteral administration of antigens like killed bacteria, LPS and toxoid. However, these were discontinued in clinical practice due to unacceptable side effects as well as inefficient protection. Since induction of immunity by the oral injection of live attenuated candidate cholera vaccine strains closely mimics infection derived immunity, this approach received great emphasis. Among the live oral vaccine strain, CVD103 HgR developed in the Centre for Vaccine Development, USA, is the most successful one. However, vaccine strain CVD103 HgR is only effective against classical type of cholera. Present cholera situation in India as well as in other parts of world is caused by E1 Tor *V. cholerae*, where CVD103 HgR is not found to be effective in providing protection. Therefore, it is important to develop a vaccine that will be effective against cholera caused by E1 Tor as well as classical strains.

**Scale of Development:** Vaccine trials are being conducted in Society for Applied Sciences (SAS), Kolkata, and Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIM), Lucknow, in collaboration with NICED, Kolkata. Volunteers, who were fed with inoculum dose of  $5.0 \times 10^9$  CFU did not shed the vaccine strain. The vaccine strain was non-reactogenic even at high doses. Sera samples were collected on 0, 15, 90 and 180 days from the vaccines and are being assayed.

**Status of Commercialization:** An US patent has been granted for the candidate vaccine strain (US Patent no. 6,106,843).

## Holey/Lacey Carbon Films for Electron Microscopy

**Product/Process:** A new method for the preparation of holey/lacey support film for electron microscopy.

**Application/Uses:** In electron microscopy, there is a tremendous requirement for holey/lacey plastic, carbon, carbon reinforced plastic and other polymer films. The requirement has increased manifold with the advent of cryoelectron microscopy. Holey films are also used for checking astigmatism, resolution and stability of the electron microscope. There is, thus, requirement for a method of preparing holey/lacey films, which is simple and reproducible. The aim of the present invention was to develop such a method for preparing holey/lacey films.

**Salient Technical Features:** Methods generally used in the preparation of holey/lacey films has some drawbacks and/or cumbersome. In this study, a new method for the preparation of holey/lacey supports film for electron microscopy has been invented. Additional reinforcement can be done with a thin layer of carbon, if needed.

**Scale of Development:** The technology has been developed up to laboratory scale.

**Status of Commercialization:** An Indian Patent (Application no. 2844/DEL/2005) has been filed.