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Defective interfering particles and their role in disease progression and persistence

Alemayehu Reta
Debre Markos University, Ethiopia

Defective interfering particles (DIPs) are internal deletion mutants of viruses that replicate at the disbursement of the parent virus. This review article aimed at reviewing current science on defective interfering particles of their molecular and immunological features, role in disease progression and persistence, impact on vaccine production and viral vectors, and future directions. Defective interfering particles are very important to the field of biotechnology due to their nature of stimulating the immune system and attenuating some of the live viruses during live-attenuated vaccine production, however, they have a devastating effect like interfering with vaccine production, i.e., decrease in the viral titer, and facilitate pathogenesis and persistence of some viral infections.

alemayehureta@yahoo.com

Preparation and development of latex agglutination test for the detection of Rota virus

Ahsan Naveed, Sajjad Ur Rahman and Kokab Rasheed
University of Agriculture Faisalabad, Pakistan

Rotavirus is the leading cause of gastroenteritis throughout the world among children less than 5 years of age. Water has been recognized as a vehicle of virus transmission. 60 samples of contaminated drinking water and sewage water were collected and screened for Rota virus detection and standardized with the help of latex agglutination test. The sample from swage water and drinking water were evaluated from various sources to elaborate the reproducibility of latex agglutination test. Hyperimmune sera were developed against Rota virus in different groups of rabbits. Serum was separated from coagulated blood. Latex particles were coated with polyvalent antibodies separated from rabbit sera. A 2% latex suspension in the glycine buffer was incubated with antibodies at 37°C for 2 hrs with mild shaking and then kept at 4°C overnight. Pallets were obtained by centrifugation at 1500 rpm for 20 minutes and suspended the pallets in glycine solution. Diluted water samples were mixed with antibody coated latex in the well. Clumping confirmed the positive result as compared to control positive and control negative system. Results showed that among 30 collected potable water samples clumping was observed in 26.66% samples whereas in 30 sewage water samples clumping was seen in 63.33%. This analysis showed that probability of Rota virus is very high in filthy water. On the other hand, potable water was also not free of Rota viral contamination though its presence was much less comparable to sewage water.

ahsannaveed.uaf@gmail.com