Future use of varicella vaccine

Biotech Research Institute, LG Chem Research Park
Jeong-min Kim

The FDA had approved Varicella Vaccine Live Oka/Merck from Merck & Co. for prevention of chickenpox due to Vavicella-Zoster Virus (VZV) infection last year. The Vaccine is produced from live attenuated VZV strain Oka/Merck derived by Merck from the Oka/BIKEN strain licensed from the BIKEN Institute which produces a Varicella-Zoster Vaccine which has been marketed in Japan since 1987.

Chickenpox has come to be widely regarded as an unpleasant but common fact of life that nearly all children go through. Most parents are not aware of the dangers of serious complication from chickenpox and are often most concerned with the potential for scarring. However, adults run considerably higher risk of life-threatening complications that include encephalitis and pneumonia. AIDS patients and others with compromised immune systems are particularly susceptible to serious complications from chickenpox.

From the experiences of clinical I & II studies of preventive vaccines for human immunodeficiency virus infection, only the live recombinant virus vaccine approaches have produced some evidence of cytotoxic T-cell response. Priming with a live recombinant virus followed by subunit boosting is a promising strategy for HIV immunization. However, Vaccinia virus which has been well known as a live virus vector had shown some adverse effect in immunocompromised persons, so it turned not to be adequate to use in AIDS patients. The Oka strain vaccine did not have an adverse effect on the patient with acute leukemia or high-risk diseases. However, the KMcC strain originated from Merck & Co. was not accepted to use in immunocompromised children because of a high frequency of adverse effects. Therefore, Oka strain VZV is especially attractive as a live-virus vector. The live, attenuated Oka vaccine strain of VZV has been administered to more than a million people in Asian countries, and has proven safe and effective in both immunocompetent and immunocompromised persons. VZV has several genes which can be interrupted without interfering with viral replication in cultured cells, thus offering potential sites for the insertion of foreign DNA into the genome. The future use of VZV as a live vector for the expression of foreign genes will be discussed.