Induction of antibody response against hepatitis E virus (HEV) with recombinant human papillomavirus pseudoviruses expressing truncated HEV capsid proteins in mice.

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Résumé en anglais	A hepatitis E virus (HEV) vaccine would be valuable to reduce the morbidity and mortality associated with the infection in endemic areas. HEV pseudocapsids and epidermal delivery of HEV ORF2 DNA vaccine by gene-gun have been shown to confer protection against virus challenge in monkeys. Vectorization of a DNA vaccine by virus-like particles is a new immunization approach. We report here the successful immunization of mice with two ORF2 genes encapsidated into human papillomavirus type 31 virus-like particles. The HEV genes ORF2(112-660) and ORF2(112-608) were optimized for expression in mammalian cells and inserted in a baculovirus-derived vector for expression in insect cells. When expressed in Sf21 insect cells, ORF2(112-660) led to the production of irregular 15 nm particles that accumulated in the cytoplasm of the cells, whereas ORF2(112-608) induced the production of 18nm particles that were present in both the cell culture medium and the cell cytoplasm. Anti-HEV immune responses were higher for the 15 nm particles (HEV112-660) than that for to the 18 nm particles (HEV112-608). Delivery into mice of two HEV ORF2 genes via a papillomavirus VLP was very effective in the induction of anti-HEV antibodies. In addition, an effective immune response to human papillomavirus capsids occurred. These engineered pseudoviruses were thus demonstrated to induce immune responses to both hepatitis E virus and human papillomavirus when they were administered to mice intramuscularly.
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