Mutations on the FG surface loop of human papillomavirus type 16 major capsid protein affect recognition by both type-specific neutralizing antibodies and cross-reactive antibodies.

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Résumé en anglais	The aim of this study was to further characterize the conformational neutralizing epitopes present on the surface-exposed FG loop of human papillomavirus (HPV) type 16 L1 major capsid protein. We have generated previously two chimeric L1 proteins by insertion of a foreign peptide encoding an epitope of the hepatitis B core (HBc) antigen within the FG loop. In addition, three other chimeric L1 proteins were obtained by replacing three different FG loop sequences by the HBc motif and three others by point mutations. All these chimeric L1 proteins retained the ability to self-assemble into virus-like particles (VLPs), with the exception of the mutant with substitution of the L1 sequence 274-279 by the HBc motif. The eight chimeric VLPs were then analyzed for differential reactivity with a set of six HPV-16 and HPV-31 monoclonal antibodies that bound to conformational and linear epitopes. The binding patterns of these monoclonal antibodies confirmed that the FG loop contained or contributed to neutralizing conformational epitopes. The results obtained suggested that the H31.F7 antibody, an anti-HPV-31 cross-reacting and neutralizing antibody, recognized a conformational epitope situated before the 266-271 sequence. In addition, H16.E70 neutralizing antibody reactivity was reduced with L1 VLPs with an Asn to Ala point mutation at position 270, suggesting that Asn is a part of the epitope recognized by this antibody. This study contributes to the understanding of the antigenic structure of HPV-16 and -31 L1 proteins by confirming that the FG loop contributes to neutralizing epitopes and suggesting the existence of both type-specific and cross-reactive conformational epitopes within the FG loop.
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