Retrovirology

Poster presentation

P19-31. Neutralizing antibodies specific for the transmembrane envelope proteins of gammaretroviruses and of HIV-1 (2F5, 4E10): comparison of their action

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Background

Antibodies broadly neutralizing HIV-1 such as 2F5 and 4E10 recognize one epitope in the membrane-proximal external region (MPER) of the HIV transmembrane envelope (TM) protein gp41 MPER of gp41 (ELDKWA, NWF(D/N)IT, respectively). We reported previously, that immunizing with the TM protein of different gammaretroviruses such as the porcine endogenous retrovirus, PERV, and the feline leukemia virus, FeLV, neutralizing antibodies were obtained, that recognized two epitopes. One epitope was located in the fusion peptide-proximal region (FPPR) (epitope 1, E1), the other in the MPER of p15E (E2). E2 of gammaretroviruses was similarly located as NWF(D/N)IT (E2) of HIV-1 and despite the evolutionary separation of HIV and gammaretroviruses, an unexpected sequence homology was observed in this region (epitope FEGWFN) (Fiebig et al., Virology, 307,406, 2003; Langhammer et al., Immunology, 117, 229, 2005; Vaccine, 23, 3341, 2005). We also reported identification of an E1 region in gp41 of HIV-1 located similarly as E1 of gammaretroviruses (Fiebig et al., AIDS, 23, 887, 2009) and enhancing the binding of 2F5 and 4E10 to their epitopes in E2.

Methods

To study the interaction of the neutralizing antibodies with their epitopes in more detail, surface plasmon resonance (SPR) analyzes were performed.

Results

Using this technology, binding of the antibodies neutralizing PERV to PERV-derived E1 and E2 and of 2F5 and 4E10 to HIV-derived E2 was confirmed. Whereas a direct interaction between E1 and E2 of HIV-1 was observed, this was not the case with E1 and E2 of PERV.

Conclusion

Detailed analyzes of the interaction between E1 and E2 and the corresponding neutralizing antibodies may help to define conformations required for the induction of broadly neutralizing antibodies.