

EPOSTER PRESENTATION

Open Access

HbAHP-25, a peptide designed *in silico*, exhibits potent anti-HIV activity *in vitro*

Tahir Bashir¹, CS Kumar², KVR Reddy^{1*}

From 2nd International Science Symposium on HIV and Infectious Diseases (HIV SCIENCE 2014) Chennai, India. 30 January - 1 February 2014

Background

Identifying and / or designing molecules that can inhibit HIV infection and be safe to the host cells is highly desired.

Methods

HbAHP-25 was designed *in silico* against CD4 binding domain of gp120 of HIV-1 by molecular docking using Z dock and PROSA softwares. ELISA and SPR were used to determine the binding ability of HbAHP-25 to gp120. Anti-HIV activity of this peptide was checked by two different assays, viz: a) On TZM bl cells, using luciferase assay; b) On CEM-GFP cells and PBMCs using p24 antigen assay. MTT assay, TER/microsphere assay and Immunofluorescence were used to determine the effect of HbAHP-25 on cell viability, epithelial monolayer integrity and permeability.

Results

Five peptides were designed, and one of the peptides, HbAHP-25, exhibits significant anti-HIV activity against various strains of HIV-1, such as HIV-1 Ada, HIV-1 NL4-3, and HIV-1 IIIB. ELISA and SPR revealed a direct interaction between HbAHP-25 and gp120, thereby inhibiting its interaction with CD4 receptor. The peptide didn't affect cell viability even at higher concentrations; nor did it affect epithelial monolayer integrity or permeability. HbAHP-25 also did not interfere with any tight junction proteins such as ZO-1 and Claudin-1, thus maintaining cell integrity as well.

Conclusion

The peptide has potent anti-HIV activity, and can be explored as a potential therapeutic /prophylactic/preventive agent.

Authors' details

¹Molecular Immunology & Microbiology (MIM), National Institute for Research in Reproductive Health, Mumbai, India. ²Department of Bioinformatics, Dr. D.Y. Patil University CBD Belapur, Navi Mumbai, India.

Published: 27 May 2014

doi:10.1186/1471-2334-14-S3-E30

Cite this article as: Bashir et al.: HbAHP-25, a peptide designed *in silico*, exhibits potent anti-HIV activity *in vitro*. *BMC Infectious Diseases* 2014 14(Suppl 3):E30.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit



* Correspondence: reddyk@nirrh.res.in

¹Molecular Immunology & Microbiology (MIM), National Institute for Research in Reproductive Health, Mumbai, India

Full list of author information is available at the end of the article