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**C.84-AIDS Vaccine Thai RV 144 Correlate Of Protection: Envelope gp120 V2 Loop, Which Induces Protective Neutralizing IgG Antibodies, Is A Marine Conus Mu-Conotoxin Binding To The Voltage-Gated Na<sup>+</sup> Sodium Channel**

Thai RV 144 vaccine efficacy is 31%; protective IgG target the gp120 V1-V2 loops. We analyse the V2 loop (*Zolla-Pazner S, 2013*) by Amino Acid (AA) sequences comparison by Basic Local

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rotein (BLASTP) with visual search and three-dimensional (3D) structures of conotoxin (*Xue T, 2003*)

and spider Atrax atracotoxin (*Pallaghy PK, 1997*)

). The 2 Thai vaccine strains V2 loops were screened on toxins binding to the voltage-gated Na channel (NaCh). Result: 1) 3 mu-conotoxin active site AAs (K13, Q14, K16) (Conus Geographicus, Kinoshitai, Striatus, Betulinus chimera) (*Ekberg J, 2008*)

) are found in the Thai V2 loop (V172 crucial):

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Monday, 09 December 2013 12:07 - Last Updated Saturday, 28 December 2013 14:38

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2) The vaccine MN strain V2 loop mimics the scorpion toxin NH<sub>2</sub>-terminus active site 1-**KKEGY**-5 (

*Kharrat R, 1989*

); its deletion abolishes the toxicity (

*El Ayeb M, 1986*

). Interestingly antibodies against scorpion toxin NH<sub>2</sub>-terminus 1-

**KKE**

**G**

**Y**

-5 induce broad cross-reactive protection (

*Devaux C, 1996*

). The toxin precursor (Cn II-13, AaH, Bot IX chimera) (

*Possani LD, 2000*

) is included.

3) V2/V3 loops of HIV-2/SIV PBJ14 (fatal AIDS) were 3D superimposed on spider Atratoxin (Atx)/versustoxin, 2 NaCh ligands. Atrax Robustus is a very dangerous spider from Australia.

V2 loop **YxxxWYxxDxxC** is conserved in HIV-2.

V3 loop AA sequence is **SGLVFH**:

## **CONCLUSION**

The scorpion venom concept of AIDS (*Tran GMK, 1989, 1993, 1997*) is confirmed by the homology between the Thai V2 loop and mu-conotoxin, a NaCh ligand. Omega-3, a NaCh modifier, is efficient in AIDS (

*Caprani A, 2012*

). AIDS vaccine should target V2/V3 loop, and avoid mitigating and deleterious IgA directed against the envelope first conserved region C1 (

*Haynes BF, 2012*

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*Tran GMK, Eur Conf Virol 2013, Lyon*

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