

A26 - Bioinformatics and gene expression

CDA0118 - Phylogenetic and genomic analyses of six full-length CRF07_BC variants isolated from injecting drug users in Taiwan

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Background: Several studies have suggested that CRF07_BC originated in China's Yunnan province, with subtype B' from Thailand mixing with subtype C from India before moving northwestward to Xinjiang province along a major Chinese heroin trafficking route. In 2004, we found a series of outbreaks of CRF07_BC among IDUs from different regions of Taiwan. The objectives were

- a.) to conduct phylogenetic analysis of full-length genomes of CRF07_BC strains from Taiwanese IDUs to understand their evolutionary relationships;
- b.) to characterize the protein sequences of different HIV genes.

Methods: Six CRF07_BC strains (2 from the north, 1 from the central and 3 from the southern region of Taiwan in 2004) were selected for full-length sequencing. The sequences equivalent to HXB2 nucleotide sequence 680 bp-9500 bp were assembled. Bioedit program was used for sequence alignment and the mosaic genome was analyzed using Bootscan in Simplot program. Phylogenetic analysis using neighbor joining (NJ) and maximum likelihood (ML) methods in Phylip package were conducted.

Results: We obtained 2 full length and 4 near-full length genomes of CRF07_BC strains. Phylogenetic analyses showed that in both ML and NJ trees, the Taiwanese CRF07_BC strains clustered with the prototypic CRF07_BC strains from Xinjiang and Yunnan provinces of mainland China. In addition, the Taiwanese CRF07_BC strains formed a monophyletic branch with a bootstrap value of 1000 out of 1000 replicates. Genomic characterization showed that compared to the original CRF07_BC strains, the Taiwanese CRF07_BC contained an extra recombination site and a special amino acid signature pattern: 7-11 amino acids deletions at the C-termini of the p6-gag proteins.

Conclusions: Our results indicate that a unique CRF07_BC has been transmitted to Taiwan and spread wildly among IDU population. It may have followed another drug trafficking route from Yunnan Province to southeast China, including Guangxi Province and Hong Kong to Taiwan.
