Setareh Moazen, J Bioequiv Availab 2018, Volume 10
DOI: 10.4172/0975-0851-C2-037

Selection of human recombinant antibodies against Wnt1: A promising strategy for immunotherapy of cancers with Wnt1 overexpression

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Wnt family comprises 19 secreted glycoproteins. Aberrant activation of Wnt signaling pathway is implicated in a wide variety of human cancers. Inhibition of Wnt signaling pathway induces significant apoptosis in various cancer cell lines. Nowadays recombinant single chain fragment variable (scFv) antibodies are introduced for cancer immunotherapy due to their human origin, small size and good penetrating properties. In this study a phage display technology was used to isolate specific anti-Wnt1 scFvs. A phage antibody display library of scFv was panned against an immunodominant epitope of Wnt1. The selected clones were amplified by PCR and DNA fingerprinting was done to show the common patterns. Phage ELISA was performed to test the specificity of the selected antibodies. PCR of the library clones revealed the presence of VH-linker-VL inserts. Fingerprinting of the library demonstrated diversity and heterogenesity of the library. Results of fingerprinting of the selected clones after panning showed two specific single chain antibodies with frequencies of 25% and 20%. Phage ELISA showed the specificity of scFv1 and scFv2 against the immunodominant epitope of Wnt1. Wnt1 signaling pathway is over expressed in many tumors including colorectal, lung, breast and head and neck cancers. In this study we successfully selected two specific scFv antibodies against Wnt1. Their human origin and ability to be manipulated by genetic engineering and conjugating with other drugs, offer their therapeutic advantegaes for targeted therapy of cancers with Wnt1 over expression. Further investigations are needed to show the effects of these antibodies *in vivo*.

Biography

Setareh Moazen is a second year science student at the University of British Columbia. Her interest in human recombinant antibodies as new drugs for immunotherapy also led her to isolate single chain antibodies against conserved sequences of glycoprotein 41 of HIV and published her work. She is a science leader at the University of British Columbia.

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