

B CELL AND T CELL EPITOPE PREDICTION FROM PROTEIN SEQUENCE



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CERTIFICATE

This is to certify that the project report entitled **B CELL AND T CELL EPITOPE PREDICTION FROM PROTEIN SEQUENCE** submitted in partial fulfillment of the requirement for the award of **Post Graduate Diploma in Bioinformatics** to the Tamilnadu Veterinary and Animal Sciences University, Chennai, is a record of bonafide research work carried out by **Balaji.T M.Sc.** under my supervision and guidance and that no part of the project report has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

Date: 10/06/2005
Place: CHENNAI


Dr. G. Thulasi, Ph.D.,
Chairman

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ABSTRACT

B CELL & T CELL EPITOPE PREDICTION FROM PROTEIN SEQUENCE.

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The prediction of T Cell and B Cell Epitope helps in the Pharmaceuticals industry for designing the drug according to the diseases.

It also helps in the sequence analysis of the pathogens. So this helps in the disease identification, which is caused by the pathogen.

The prediction of T Cell and B Cell Epitope is carried out, by using the Viral Protein Sequence from the protein database.

25 sequences of viral protein were obtained from the protein databases namely **SWISSPROT** and **NCBI**.

The sequence analysed were Baculoviral protein 5 Isoform (4), Hepatitis Virus (5), Human Immuno Virus (3), Simian Immuno Virus (3), Papillomavirus (2), Poliovirus (4), Caprine Encephalitis (1), Mouse Cytomegalovirus (1), Theiler's Encephalomyelitis (1), Murine Thymoma Viral Oncogene (1). Out of these

viruses, SIV Nef protein (Simian Immuno Virus) viral sequence did not show antigenic index whereas other virus showed antigenic index. This results revealed the possibility of creating specific immune response against the virus studied.

These 25 viral protein sequences were subjected to identification of T Cell and B Cell Epitopes by using the ***DNASTAR tool***.

The sequence, which has been collected, were subjected to the analysis in EditSeq of DNASTAR and the analysed sequences were viewed in Protean another tool of DNASTAR to get the Protein structure and the Antigenic Index. The Protean, which gave the entire contents of the protein sequence, in the graphical form.

It also gave the Antigenic Index (*Jameson-Wolf*), by which the Epitopes were predicted.

Out of 25 sequences, 24 sequences show Antigenic Index (Epitope) and 1 sequence (Nef Protein, SIV) posed negative for Antigenic Index (Epitope)

Keywords: T Cell and B Cell – Epitope Prediction – DNASTAR – EditSeq – Protean – Antigenic Index.