

ABSTRACT

Published studies provide good evidence to support the strong opinion that *S.mutans* is the main causative agent of dental caries. Antigen I/II of *S.mutans* serotype c with a molecular weight of 185 kDa is according to some research workers, closely related to the pathogenesis of dental caries.

A study to identify the overlapping sequence of amino acids (epitopes) of 22 immunoreactive peptides derived from the 824 to 853 residues of the P-region of antigen I/II of *S.mutans*, was carried out on 30 sera and saliva of dental students of the Airlangga University in Surabaya (aged 17 to 21 years), comprising 15 students without caries (DMFS= 0 to1) and 15 students with caries (DMFS = 8 to12).

For this purpose, the amino acid sequence of the 824 to 853 residues of the P-region of the above mentioned antigen was entered into a B-net computer programme and cut into series of 22 peptides, 9 mer overlapping peptides with an overlapping of 8-mer and an offset of one mer. The series of the above mentioned 22 peptides were synthesized on the surface of polyethylene pins by Chiron Technologies, Clayton, Victoria, Australia, in the form of an epitope scanning kit, and screened using sera as well as saliva of the 30 subjects entered into this study, using an indirect ELISA method.

The results of the study revealed that 3 types of reactive overlapping common sequence of amino acid were identified, as the following :

1. Caries marker epitopes, corresponding to peptides with amino acid sequences VTKEKPT (826 to 832 residues), and PTPPVKP (831 to 837 residues), which differed from the ones obtained by Matsushita in Japan.
2. Pathogenic epitopes, corresponding to peptides with amino acid sequences PTKPTYETE (840 to 846 residues).
3. Commensal epitopes, corresponding to amino acid sequences PVKPTAP (834 to 840 residues), PTAPTKP (837 to 843 residues) and TYETEKPL (843 to 851 residues).

Using saliva of the subjects under study, 2 types of reactive overlapping common sequences of amino acid (epitopes) were identified i. e :

1. Caries marker epitopes, corresponding to TPPVKP (832 to 837 residues), and TAPTKPTY (838 to 845 residues) sequences of amino acid, and
2. Commensal epitopes, corresponding to VTKEKPTP (826 to 833 residues), PVKPTAP (834 to 840 residues), and TYETEKPL (844 to 851 (residues) sequences of amino acid.

From the analysis of data obtained in the study, it can be concluded that the antibodies produced by Japanese individuals in Japan to the P-region (824 to 853 residues) of antigen I/II of *S.mutans* differed from that produced by the Javanese individuals in Surabaya to the same antigen.

Identification of the afore mentioned epitopes is important to understand the biological and immunological functions of the peptides and to design better vaccines for the prevention of dental caries.

Key words : antigen I/II of *S.mutans* ; epitope scanning, caries marker epitopes, pathogenic epitopes, commensal epitopes