Threonine at position 6 is not essential for the immunosuppressive activity of HLA-DQ(β164-172)-hexapeptide.

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Streszczenie

It has been previously found that the nonapeptide fragment of human leukocyte antigen (HLA)-DQ molecule, located in the β chain 164–172 with the Thr-Pro-Gln-Arg-Gly-Asp-Val-Tyr-Thr sequence, suppresses the immune response. The hexapeptide: Arg-Gly-Asp-Val-Tyr-Thr was the shortest fragment of HLA-DQ showing both cellular and humoral immunosuppressive activity, while the analog deprived of the last amino acid (Arg-Gly-Asp-Val-Tyr) showed very weak stimulatory activity with respect to the humoral immune response. This suggested that the threonine residue in the hexapeptide plays an essential role in immunosuppression.In this study, the role of the side chain of threonine residue was scrutinized in a series of synthetic analogs in which the Thr residue was substituted by various amino acids, amides and methyl ester. The synthesized peptides were evaluated for their immunosuppressive activity. Our results indicate that the substitutions did not significantly affect the immunomodulatory properties, revealing that the threonine side chain is not critical for the immunosuppressive potency of the peptides. Interestingly, a simple analogue, pentapeptide amide H-Arg-Gly-Asp-Val-Tyr-NH_2 possessed high immunosuppressive potency, comparable to that of cyclosporine.