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Novel Substrates for Determination of the Fibroblast Activation Protein-α Activity

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Fibroblast activation protein-α (FAP- α) is a membrane-associated serine protease of the S9b family of post-proline cleaving enzymes. It is usually expressed in reactive stromal fibroblasts in many types of diseases connected with extensive pathological alterations of the connective tissue like arthritis, fibroses, carcinomas and sarcomas. That is why the enzyme is considered a valuable marker for those entities. Design and development of specific FAP-α substrates are rather challenging due to the enzyme's structural similarity with the other proline-specific enzymes. In this paper we present the design of three novel substrates for the determination of FAP-α activity as well as the assessment of their efficacy and specificity. According to the obtained results, one of the newly developed substrates has a potential to be used as a highly specific substrate for FAP-α.

Key words: fibroblast activation protein-α, molecular modeling, enzyme substrate, substrate specificity