

## *Veni, Vidi, Vici*: immobilized peptide-based conjugates as tools for capture, analysis, and transformation.

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Analysis of peptide biomarkers of pathological states of the organism is often a serious challenge, due to a very complex composition of the cell and insufficient sensitivity of the current analytical methods (including mass spectrometry). One of the possible ways to overcome this problem is sample enrichment by capturing the selected components using a specific solid support. Another option is increasing the detectability of the desired compound by its selective tagging. Appropriately modified and immobilized peptides can be used for these purposes. In addition, they find application in studying the specificity and activity of proteolytic enzymes. Immobilized heterocyclic peptide conjugates may serve as metal ligands, to form complexes used as catalysts or analytical markers. In this review, we describe various applications of immobilized peptides, including selective capturing of cysteine-containing peptides, tagging of the carbonyl compounds to increase the sensitivity of their detection, enrichment of biological samples in deoxyfructosylated peptides, and fishing out of tyrosine-containing peptides by the formation of azo bond. Moreover, the use of the one-bead-one-compound peptide library for the analysis of substrate specificity and activity of caspases is described. Furthermore, the evolution of immobilization from the solid support used in peptide synthesis to nanocarriers is presented. Taken together, the examples presented here demonstrate immobilized peptides as a multifunctional tool, which can be successfully used to solve multiple analytical problems.

### Słowa kluczowe

immobilized peptides, peptide conjugates, sample enrichment, receptors, mass spectrometry, capturing, enzyme specificity

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