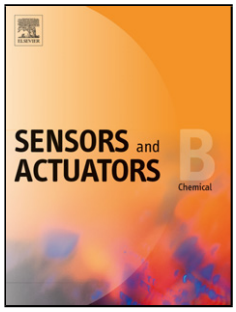

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One-pot and one-step colorimetric detection of aminopeptidase N activity based on gold nanoparticles-based supramolecular structure

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Research Highlights

- A colorimetric method is designed for detecting aminopeptidase N activity.
- The method relies on a peptide functionalized gold nanoparticles/cucurbit[8]uril structure.
- The detection limit of aminopeptidase N activity was 0.42 μg/mL.
- The method is also available directly in serum samples.

Abstract

Aminopeptidase N (APN) is an important ectopeptidase involved in many physiological functions e.g. tumor angiogenesis, and the detection of APN activity thus facilitates the early diagnosis and elucidation of tumor development. Herein we propose a one-pot and one-step colorimetric sensing method for detecting APN activity based on a peptide functionalized gold nanoparticles/cucurbit[8]uril (pep-AuNPs/CB[8]) supramolecular structure. In principle, a peptide that comprises both the recognition sequence of APN and binding motif of CB[8] is first functionalized onto the surface of AuNPs. Because CB[8] can interact with two