

Colorimetric detection of allergies based on an immunoassay utilizing peroxidase-mimicking nanozymes

안희태, 조성연, 김문일[†]
가천대학교 바이오테크놀로지학과
(moonil@gachon.ac.kr[†])

We report a highly efficient colorimetric allergy detection system by using hierarchically-structured platinum nanoparticles (H-Pt NPs) as peroxidase mimetics. H-Pt NPs were conjugated to an antibody for detecting immunoglobulin E (IgE) analytes, which are the representative markers to diagnose allergy, and successfully integrated into the conventionally used allergy diagnostics, ImmunoCAP diagnostic test. In this approach, total and specific IgE were detected in a 10 min time period at room temperature with high specificity and sensitivity. The high catalytic activity and stability could allow the H-Pt NPs to replace conventional peroxidase-based immunoassay systems as part of new, rapid, effective, and convenient assay systems which can be widely utilized for the identification of clinically important target molecules.