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SOME IMPORTANT CONCEPTS FOR LEAF PROTEIN EXTRACTION AND TWO-DIMENSIONAL ELECTROPHORESIS TECHNIQUE

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Proteomic analysis of plants relies on high yields of pure protein. In plants, protein extraction and purification to perform two-dimensional electrophoresis technique present a great challenge due to accumulation of a large amount of interfering substances including polysaccharides, polyphenols and secondary metabolites. Therefore, it is necessary to modify and use an effective protein extraction protocols for two-dimensional electrophoresis technique. To achieve high yields of pure protein and successful two-dimensional electrophoresis some important factors during protein extraction process, protein precipitation methods, iso-electric focusing program such as; rehydration types (passive or active), isoelectric point (PI), IPG strips (size and pH), power conditions and resolution in IEF, equilibration buffer, SDS-PAGE process such as; choosing a gel size format, gels percentage and power conditions, detection of protein in gels, image achievement and analysis, and identification and characterization of 2-D protein spots should be considered.

SYNTHESIS, PROPERTIES AND APPLICATIONS OF NOBLE METAL NANOPARTICLE-BIOMOLECULE INTEGRATION

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Noble metal nanoparticles, such as gold or silver nanoparticles and nanorods exhibit unique photonic and electronic properties. Functionalization of noble metal nanoparticles with biomolecules (e.g., protein and DNA) has numerous applications in catalysis, delivery, therapy, imaging, sensing, constructing nanostructure and controlling structure of biomolecules. In this paper, we review recent research about noble metal nanoparticle-biomolecule integration from the following three aspects: synthesis of noble metal nanoparticle-biomolecule integration, including electrostatic adsorption, direct chemisorption of thiol derivation, covalent binding through bifunctional linkers and specific affinity interaction; photonic properties and bioactivation of the nobel metal nanoparticle-biomolecule conjugation; applications in biosensor, imaging, diagnosis and therapy in medicine, and assembly of nanoparticle. The special attention has been paid on the conjugation of noble metal nanoparticle and biomolecule as well as the most recent related applications.

Note: