Affinity Stabilization of Protein Drugs

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The development of protein drugs is often hindered by the instability of these large, complex molecules.

Researchers at Purdue University have developed a novel method for stabilizing protein drugs based on ligand binding. The peptide epitopes are covalently linked to a biodegradable synthetic polymer, forming a pseudo-ligand. The pseudo-ligand binds to the protein drug with high affinity and helps to preserve near-native conformation, minimize unfolding, and prevent aggregation during manufacturing, shipping, and storage. Since the pseudo-ligand is comprised of a biodegradable polymer backbone and small peptide epitopes, it is expected to be biocompatible and nonimmunogenic. In some applications, it may be desirable to administer the protein drug in its free form. In such cases, the pseudo-ligand can be immobilized on a solid surface through a coupling agent and released prior to administration using a competing ligand.

Advantages:
-Preserves near-native conformation
-Biocompatible and nonimmunogenic

Potential Applications:
-Pharmaceutical industry

Related Publications:
Zhang, Jun, et al. Protein G, Protein A and Protein A-Derived Peptides Inhibit the Agitation Induced Aggregation of IgG. Molecular Pharmaceutics. 2012, 9 (3), pp 622–628. DOI: 10.1021/mp200548x.

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