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A novel resin for efficient oxidative protein folding

Keywords

Oxidative protein folding, Diselenide, Resin, Disulfide bonds, Reusable

Summary

A resin was developed for efficient and practical oxidative folding of disulfide bond-containing proteins. The resin, which can be simply separated from the refolded protein and easily recycled, has great potential for diverse protein folding applications.

Background

In the past 30 years, only 30 protein-based pharmaceuticals have been brought to the market. This number is so low because biotechnological protein production is not easy. It is frequently hampered by incorrect formation of the functional structure of a protein, often caused by problematic protein folding.

Patent Status

- Patent pending PCT

Invention

The invention consists of an oxidative protein folding reagent on a water-compatible solid support (resin). The attachment of the reagent to the resin facilitates practical oxidative protein folding, allowing simple removal of the reagent from the refolded protein, without sacrificing folding efficiency (Figure 1). In proof of concept experiments, the method shows excellent rates and yields, even at high protein concentrations.

Features & Benefits

- Efficient oxidative protein folding with excellent rates and high yields
- A broad range of disulfide bond-containing proteins can be folded
- Oxidative protein folding at high protein concentrations (5 - 300 mg/ml)
- A very convenient method to separate resin and refolded protein
- The resin can be re-used

Field of Application

- Biotech and Pharma: Production of disulfide bond-containing proteins
- Biotech research: Laboratory kit for quick refolding of proteins

References

- Catalysis of oxidative protein folding by small-molecule diselenides: Beld, et al., J. Biochemistry 2008, 47: 6985-6987

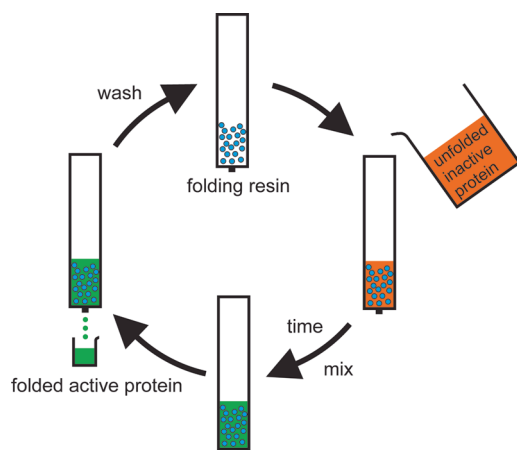


Fig. 1: In a simple and convenient way the unfolded inactive protein will be folded upon interaction with the novel resin. The folded active protein can be eluted and the resin can be washed and re-used.

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