

Inclusion Body Solubilisation and Renaturation Kit

Solubilisation and refolding buffer for high recovery of recombinant proteins from inclusion bodies



Background

Protein expression as inclusion bodies provides several advantages such as easy separation of large quantities of highly enriched proteins, less degradation of recombinant proteins by cellular proteases and reduced toxicity to the host cells.

The recovery of proteins from inclusion body is a cumbersome process. The present technology provides buffers for solubilisation and refolding of inclusion bodies.

Technology

The solubilization buffer protects the native like secondary structure of target proteins during solubilization which prevents protein aggregation and easy renaturation of solubilized proteins. 4mg/ml of inclusion body can be solubilized in the buffer.

The refolding buffer based on urea and sucrose refolds the target protein to their bioactive conformation.

Recovery of recombinant proteins is 50% i.e. 50 mg of inclusion bodies solubilized in 10 ml of solubilization buffer yields 25 mg of bioactive proteins.

Refolding yield is 76.9% after solubilizing in the solubilization buffer.

High recovery of recombinant proteins using the solubilization buffer have been achieved for growth factors, interferons, interleukins, antibody fragments, human growth hormone, bovine growth hormone, human super oxide dismutase (SOD) and Mycobacterium tuberculosis derived recombinant enolase and pyruvate kinase

Potential Applications

In biotechnology and pharmaceutical industry for downstream processing of recombinant proteins.

Inventor

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Value Proposition

- 50% recombinant protein recovered through this process, compared to the 20% recovery rate achieved by the currently available processes.
- Can be used for solubilizing inclusion body expressed in microbial as well as eukaryotic expression systems.
- Adaptable for a wide variety of recombinant proteins.
- Higher recovery rate and simple process will lower the production cost.
- The protein purity obtained through the present method is 98-100% and is suitable for research, diagnostic and therapeutic applications.
- The buffers can be stored at room temperature.
- The shelf life of the buffers are 6 months.
- The buffers are of low cost (approximately Rs. 2000/ for 100 ml). The cost of the "inclusion bodies solubilisation reagent" presently in market ranges from Rs.5,000-6,000 for 25 ml of reagent.

Intellectual Property status

Granted European patent (EP2147093). Patent pending in India, Australia and USA.

Technology status - Process has been tested at a scale of 500 mg of recombinant protein per day



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