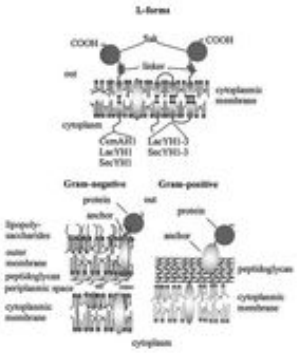
Technology Offer

Cell wall-less bacteria (L-forms) for high yield heterologous protein expression

Reference Number 11-00035

Challenge

Prokaryotic expression systems are widely used for the production of recombinant proteins, but often encounter problems to obtain sufficient yields of the functionally active gene products. Most challenging is the formation of inclusion bodies, incorrect folding of the expressed protein, protein toxicity for the producer cells and protein degradation by proteases. To overcome such problems and to obtain a better production of functional proteins, alternative expression systems are required.



Cell membrane structure in L-forms and commonly used Bacteria system (Hoischen et al., AEM Feb 2002).

Technology

The technology discloses cell wall-less bacteria (L-forms) strains and their innovative use for heterologous protein expression. The system has been successfully tested for the efficient production of prokaryotic and eukaryotic soluble, transmembrane and membrane-bound proteins at high yields and may be used for large scale and high throughput applications.

This approach shows multiple advantages compared to usual *E. coli* producer strains, such as (i) secretion of proteins as soluble, functionally active molecules leading to a reduced toxicity for the cell, (ii) reduced risk for formation of inclusion bodies, (iii) higher stability of the protein product and (iv) prolonged periods of synthesis along with (v) the absence or the reduction of endotoxic and immunoreactive substances.

The system is valuable for synthesis and purification of proteins that are difficult to be express in other cell systems, or which shall be produced in a membrane-bound or surface-displayed form.

Commercial Opportunity

Material available for licensing; Collaboration opportunity.

Further Reading

Gumpert J and Hoischen C - ”Use of cell wall-less bacteria (L-forms) for efficient expression and secretion of heterologous gene products.“- Curr Opin Biotechnol. 1998 Oct;9(5):506-9.

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