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INCLUSION BODIES – MORE THAN JUST WASTE!

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Against the outdated belief that inclusion bodies (IBs) in Escherichia coli are only inactive aggregates of misfolded protein, and thus should be avoided during recombinant protein production, numerous biopharmaceutically important proteins are currently produced as IBs. To obtain correctly folded, soluble product, IBs have to be processed, namely harvested, solubilized and refolded. Several years ago, it was discovered that, depending on cultivation conditions and protein properties, IBs contain partially correctly folded protein structures, which makes IB processing more efficient. I present a method of tailored induction of recombinant protein production in E. coli by a mixed feed system using glucose and lactose and its impact on IB formation. My method allows tuning of IB amount, IB size, size distribution and purity, which does not only facilitate IB processing, but is also crucial for potential direct applications of IBs as nanomaterials and biomaterials in regenerative medicine.

Keywords— Escherichia coli BL21(DE3), inclusion body, pET expression system, lactose

Biography

Oliver Spadiut studied Food Science and Biotechnology at the University of Natural Resources and Life Sciences (Vienna). After 18 months of successful post-doctoral research at the Royal University of Technology KTH in Stockholm, Sweden, he became University Assistant at TU Wien, Austria. Dr. Spadiut received his Habilitation in Biotechnology in March 2015 and is currently Asst. Prof. at TU Wien and group leader of the research group "Integrated Bioprocess Development".

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