

Publication

Assessment of the stability of TGF β 3 bioactivity for potential bioreactor applications

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In order to develop suitable bioreactor systems and processes for automated and standardized cell cultures involving the use of bioactive factors, we determined the stability of transforming growth factor beta 3 (TGF beta 3) over storage time and under conditions typically used for mammalian cell culture. Using a reporter gene assay with firefly luciferase as readout, significant reduction of TGF beta 3 bioactivity was detected to occur both in serum containing medium (SCM) and serum free medium (SFM). The residual activity, quantified by parallel line assays, progressively decreased with time, down to 60 in SFM after 1 week at 37 degrees C, with no further decrease until 3 weeks, whereas such loss could not be predicted using a conventional ELISA method. The reduction of TGF beta 3 bioactivity had a negligible influence in a typical biological assay (e.g., chondrocyte proliferation), supporting the possibility of prolonged storage of medium pre-supplemented with TGF beta 3 for bioreactor-based chondrocyte expansion. With the ultimate goal of defining suitable operating protocols for automated cell culture bioreactors, the proposed approach should be extended to assessing the stability of other possibly labile medium supplements. (c) 2007 Elsevier B.V. All rights reserved.

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