

**TITLE:** EFFECTS OF TGF-B1 AND PDGF-BB OVER THE GROWTH PERFORMANCE OF CHO AND HEK CELL LINES THROUGH EXOGENOUS ADDITION AND STABLE HETEROLOGOUS EXPRESSION

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**ABSTRACT:**

Peptide growth factors are multifunctional proteins with a wide array of clinical and research applications, notably in regenerative medicine and tissue engineering. Most commercially available recombinant growth factors are produced by mammalian host cells known to be susceptible to regulation by these molecules, which, through autocrine signaling, could leverage cell proliferation and decrease animal serum dependence on cultivation processes. The verification of such effects could suggest the adoption of growth factor codifying genes in development and optimization strategies of animal cell lines for industrial bioprocesses. The objective of this work was to assess the effects of stable heterologous expression or exogenous addition of TGF-  $\beta$ 1 and PDGF-BB over the growth performance of CHO-DG44 and HEK293 cell lines in 24-well plate adherent culture at standard and depriving fetal bovine serum (FBS) concentrations. Although there weren't significant differences in maximum specific growth rate ( $\mu$ XMAX) between parental and PDGF-BB producing HEK293 cell lines, exogenous growth factor addition at serum depriving conditions has led to over 20% increases in saturation density (SD). The expression of TGF- $\beta$ 1 didn't improve CHO cells growth performance at standard serum concentration, but mitigated the negative impact of deprivation: at 1,4% FBS,  $\mu$ XMAX and SD were 2 and 5 times higher in producing cell line.

**Keywords:** CHO, growth kinetics, growth factors, HEK, PDGF-BB

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