# Engineering CHO cells galactose metabolism to reduce lactate synthesis

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Objective: Over-express galactokinase (Galk1) in tissue plasminogen activator (tPA) producing CHO cells as a potential strategy to improve cell growth and product synthesis. Results: tPA producing CHO cells were transfected with the galactokinase (Galk1) gene. CHO-Galk1 cells showed a 39% increase of the specific growth rate in galactose. Moreover, clones were able to use this hexose as their main carbon source to sustain growth contrary to their parental cell line. Metabolic Flux Analysis revealed that the CHO-Galk1 selected clone shows an active metabolism towards biomass and product synthesis, characterized by higher fluxes in the TCA cycle, which is consistent with increased cellular densities and final product concentration. Conclusion: This cellular engineering strategy, where modifications of key points of alternative carbon sources metabolism lead to an improved metabolism of these sugars, is a starting point towards the generation of new cell lines with reduced lactate synthesis and increased cell growth and productivity.