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MULTIPLICATION OF THE PHYSIOLOGICAL STATE OF *E. COLI* AND *L. LACTIS* IN CONTINUOUS FERMENTATION

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The physiological state of bacteria is determined by environmental conditions (T, pH, availability of nutrients, etc) and culture history (Follstad, Balcarcel, Stephanopoulos, & Wang, 1999). Continuous cultivation is regarded as a supreme method to keep the bacteria in steady state, thus facilitating the establishment of cause and result relationship in studies of physiology (Hoskisson & Hobbs, 2005).

It is sometimes convenient to transfer the bacteria in a defined physiological state from one bio-reactor into several. To achieve the proposed aim, one has to be confident that the steady state is not altered during the "multiplication" of the physiological state.

We used *E. coli* and *L. lactis* chemostat cultures to study the effect of culture transfer in bio-reactors. The unaltered physiological conditions were observed on macroscopic level (Fig.1.) as-well as on the level of transcriptome (data not shown).

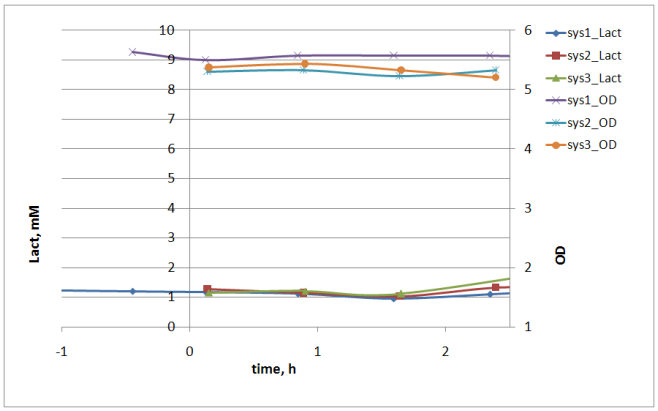

Fig.1. Macroscopic parameters indicating un-altered physiological state after culture transfer between bio-reactors at dilution rate 0.2 h^{-1}.The metabolites glucose, formate, acetate and ethanol remained below detection limit. Sys1 indicates the reactor containing the original culture, sys2 and sys3 indicate the vessels to which transfer occurred.

References

Follstad, B. D., Balcarcel, R. R., Stephanopoulos, G., & Wang, D. I. (1999). Metabolic flux analysis of hybridoma continuous culture steady state multiplicity. *Biotechnology and bioengineering*, *63*(6), 675-83. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10397824.

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