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EVALUATION OF MAGNETIC FIELD INFLUENCE ON CHINESE HAMSTER OVARY CELLS

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The influence of magnetic field on mammalian cells and their biotechnological properties has been widely investigated. Several mammalian cells dominate the industry as measured per number of products in the market. Previously, Chinese hamster ovary (CHO) cells have demonstrated increased cell permeability, gene expression, proliferation and micronuclei formation after magnetic field exposure. On the contrary, it has been reported that the cell survival and growth rate, cell cycle distribution and mutation frequency are not influenced. The purpose of this study is to evaluate magnetic field influence on mammalian cell CHO-S proliferation by application of a static magnetic field generated by permanent magnets.

Methodology: **Mammalian cell culture CHO-S was cultivated in cell culture dishes infixed into magnetic yoke under 0.5T magnetic field intensity. Cells were cultivated in a batch regime for 2 and 3 days and in a fed-batch regime for 3 and 4 days by adding the cell culture media after day 2 (2+1 and 2+2 days, respectively). Cell count and viability were determined using trypan blue exclusion method with a hemocytometer**

Results: **Obtained results showed (Fig.1) that viable cell count after 2-4 days of cultivation varied from 13 3 to 48 16 million. Magnetic field has no statistically significant influence on cell proliferation. Factors that influence cell proliferation are cultivation regime and duration. During the fed-batch regime for 4 days, viable cell count increased more than 3 times compared to the batch regime for 2 days.**

Conclusion & Discussion: **The research showed that 0.5T static magnetic field exposure has no statistically significant influence on CHO cell proliferation. However, proliferation increased due to the change of cultivation regime and duration.**

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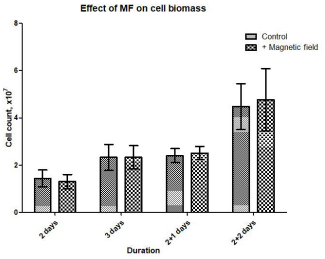

Figure 1: Magnetic field influence on cell proliferation after 2 and 3 days in a batch regime and 3 and 4 days in a fed-batch regime (2+1 and 2+2 days, respectively).