

## **Effect of Pluronic P85 Block Copolymer on transcriptome of human tooth germ stem cells *in vitro***

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Pluronics blocking copolymers, such as P85, are currently considered as a drug delivery carriers in various disorders and cancers. These compounds can impact many biological processes but there are few reports explaining their molecular function in the cell. The inhibiting effect of Pluronics on cancer cells depends on their chemical structure and hydrophobic properties. Encapsulation of anti-cancer drugs in the Pluronic micelles alters their distribution *in vivo* leading to higher rate of accumulation inside the tumor when compared to free drugs. Although Pluronics are extensively studied using tumor cell lines, there is little known about the effect of Pluronics on normal stem cells.

Here we present our data on genome-wide gene expression in human tooth stem cells (hTGSCs) treated with Pluronic P85 Block Copolymer (P58). Illumina microarray method was used in this study. Substantial changes in the 252 genes were detected in hTGSCs exposed to P85 treatment. The gene enrichment approach was carried out using database for annotation, visualization and integrated discovery (DAVID) and results were classified in several biologically meaningful clusters. Finally, we constructed a global regulatory network of stem cell differentiation pathways and multi-drug resistance (MDR) process using available bioinformatics databases to demonstrate association of P85-modulated genes with stem cells differentiation and MDR processes as well as cross-talk between stem cell differentiation pathways with MDR associated genes. In conclusion, our results were in line with many of P85-mediated biological processes published previously and can help us to gain better molecular perception of P85 biological effects.