

## Cancer cells proliferations responde differentially to transferrin-cerium. a comparison between MCF-7 and HeLa cancer cell.

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**Background and Aims:** Despite enormous advanced techniques to understand breast cancer and cervical carcinoma biology, there is still unknown information regarding to cell survival. We previously show that Cerium ion in the presence of apotransferrin could alter the cellular proliferation. In this study a comparison between Hela and MCF-7 cancer cell proliferations respond to cerium-apotransferrin is investigated.

**Methods:**The MCF-7 and HeLa cell lines were cultured at 37°C with a humidified incubator, 5percent CO<sub>2</sub> in RPMI640/10percent FCS, 50U/ml penicillin-streptomycin. The cells were incubated with a logarithmic-concentrations of cerium (0 to 1000μ ) with/without apotransferrin(10μ ) for two periods of incubation. To determine the effect of cerium-apotransferrin on cell viability, a MTT assay was used.

**Results:** The results show that direct incubation of cancer cells with a apotransferinn induced cellular proliferations for both MCF-7 and HeLa cancer cells. The MCF-7 cells were responded more sensitive than HeLa cells. When cells incubated with Cerium/apotransferrin ratios, the cellular viability for MCF-7 at a Cerium concentration of 1 μ was significantly reduced to 55-60 percent, while this trend was observed for HeLa cells at a Cerium concentration of 100 μ . The results also show that the Cerium metal ion by itself could significantly decline the cancer cell growth.

**Conclusions:**In this study breast cancer cells are 100 times more sensitive than human cervical carcinoma cells in response to Cerium metal ion. MCF-7 cells have more transferrin receptor than HeLa cells that might support the MCF-7 cells Cerium-uptake phenomena. Cerium exerts biological effects mainly by resemblance to Iron and Calcium. Therefore, it could disrupt the Iron and calcium pathways in cancer cells even in a very low concentration. Cancer cells identify and classify by cellular sources, therefore they present special activities in distinct and definite pathways for survival. Further studies require clarifying the exact mechanism of cancer cells respond to Cerium/transferrin.

**Keywords:** HeLa cells; MCF-7 cells; Apotransferrin; MTT assay; Cerium/Apotransferrin