

SHC 22. CYTOGENETIC EFFECTS OF SILICON DIOXIDE ON HUMAN PERIPHERAL BLOOD LYMPHOCYTES IN VITRO

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Silicon dioxide as a termed Silica is chemically colorless to white and insoluble in water. Silica has widespread industrial applications including use as a food additive, anti-foaming agent, and excipient in drugs and vitamins. Crystalline silica is an important industrial material that occurs in several forms are used a wide variety of industrial settings, including construction, mining, manufacturing, maritime, and agriculture. Occupational exposure to crystalline silica can lead to the development of disabling and sometimes fatal lung diseases, including silicosis and lung cancer.

In this study clastogenic effects of Silica (SiO_2) were investigated after 24 and 48 hours treatment with cultured human lymphocytes at doses of 1000, 500, 250 ve 125 $\mu\text{g/ml}$ by using Cytokinesis Block Micronucleus (CBMN), Sister Chromatid Exchange (SCE) and Chromosome Aberration (CA) methods.

The results indicate that Silica caused a cytotoxic and cytostatic effect in human lymphocytes at a concentration 1000, 500 ve 250 $\mu\text{g/ml}$ due to decreased Replicaton Index (RI) and Cell Proliferation Index (CPI). Together with these findings, statistical increase in the percentage the cells with micronucleus formations (MN), chromosome aberrations (CA) and frequency of Sister Chromatid Exchanges (SCE) were observed at the lowest concentration (125 $\mu\text{g/ml}$) of Silica.

In conclusion, it can be assumed that the higher concentrations of Silica have significant cytotoxic activity while it has shown considerable cytogenetic in other words clastogenic effects only at lowest dose for human peripheral lymphocytes *in vitro*.

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