

Cell Proliferation and Gene Expression Changes in Mammalian Ovary Cells in Response to Triclosan Exposure

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Triclosan [5-chloro-2-(2,4-dichlorophenoxy)phenol] is an antimicrobial agent found in numerous common personal care products, such as deodorant, hand soaps, and shampoos. Despite the known toxicity of triclosan on aquatic organisms, research on the genotoxic, mutagenic, and carcinogenic effect of triclosan on mammalian cells has to date been inconclusive. However, some previous studies have observed genetic damage in different mammalian cells, molluscan cells, and algal species. Additionally, changes in cell proliferation have been observed in mammalian cells at varying concentrations of triclosan. This study hopes to determine whether triclosan exposure will increase or decrease cell proliferation as well as lead to changes in gene expression in Chinese hamster ovary (CHO) cells. The data suggests that there is a change in cell proliferation in response to triclosan; however, only a significant (61%) increase in cell proliferation was observed at 7 ppm. RNA was extracted from CHO cells after exposure to triclosan for five days, and reverse transcriptase quantitative PCR (RT-qPCR) was performed using primers to Tp53 and P450. The greatest difference in gene expression was surprisingly at the lowest triclosan concentration, 3 ppm. The results of this study add to previous research in advancing our understanding of the effect of triclosan on mammalian cells.