Cytotoxic Effects of PBDEs Congeners (BDE-99 and BDE-47) on Human Hepatoma Cells (HepG2)

Souza, A.O.¹; Oliveira, D.P.²; Dorta, D.J.¹

¹ Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Departamento de Química, FFCLRP, USP, SP, Brazil;
² Faculdade de Ciências Farmacêuticas de Ribeirão Preto, Departamento de Toxicologia, FCFRP, USP, SP, Brazil.

Polybrominated diphenyl ether (PBDE) are a class of flame retardants present in several consumer products that can be released to the environment during daily use, manufacture process or inadequate disposal becoming accumulative in the environment and in the living organisms. Recently, evidences of their toxic effect are being showed but their mechanisms remain unclear due to their structural variety. Therefore, this work evaluated effects of different PBDEs congeners (BDE-99 and BDE-47) on human hepatoma cells (HepG2) as an alternative to investigate the toxic potential of these compounds on the health. Briefly, cells were incubated at 37°C, in an atmosphere containing 5% CO₂ and 96% relative humidity for 24 h before of the treatment and PBDE was added at the concentrations ranging from 0.1µM to 25µM for 24 and 48 hours. Cell viability was performed by MTT assay and the induction of cell death was measured by phosphatidylserine exposure using Anexin V and propidium iodeto (PI) staining, followed by the assessment of nuclear fragmentation using Hoechst 33342 fluorescent dye. Our results showed a decrease in cell viability after exposure to BDE-99 and BDE-47 for 24 and 48 hours. All the changes on cell viability were followed by an increase of phosphatidylserine exposure at the cell membrane and nuclear fragmentation. These findings are indicative of apoptosis, which are evidences of the cytotoxic potential of PBDEs on HepG2 cells.

Word Keys: PBDE; apoptosis; HepG2 cells.
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