ABSTRACT

The purpose of this study was to determine the capacity of three *Fusarium* mycotoxins: BEA, DON, T-2 toxin, to induce cytotoxicity using the mammalian CHO-K1 cells by the NR assay. CHO-K1 cells were exposed to several concetrations of DON, BEA and T-2 toxin and several incubation times. The extent of cell injury was assessed by NR uptake assay, after an incubation period of 24, 48 and 72h.

Moreover, the viability of CHO-K1 cells was measured in the presence of a mixture of two or three of the mycotoxins. Significant differences were observed between the compounds tested.

All toxins, DON, BEA and T-2 toxin, tested individually diminish cell viability. Individual mycotoxins reduce viability in increasing order:

BEA<DON<T-2 toxin. Our results show that CHO-K1 cells are extremely sensitive to T-2 toxin. T-2 toxin exhibited the most cytotoxic response against the cell line tested.

Results obtained indicate that CHO-K1 cell line, exhibited a time and concentration-dependent cytotoxicity. Our results demonstrated that the T-2 toxin was found to be more cytotoxic during the exposure period, which was totally in agreement with the data previously published.

The aim of this study was also to evaluate the cytotoxicity of low concentrations of mycotoxin combinations on CHO-K1 cells. We have studied the interaction of binary or tertiary mixtures of *Fusarium* toxins on the CHO-K1 cells, by the measuring of cell viability by the NR test. All toxins, DON, BEA, T-2 toxin, tested in combination show highest decreases in cell viability compared to values obtained with individual mycotoxins.

An increase in the cytotoxicity effects was observed for BEA from 24 to 72 h of exposure when it was assayed combined with T-2 toxin, compared NR_{50} obtained alone, showing a slightly increase in cytotoxicity effects from 24 to 72 h exposition when BEA was assayed in combination with DON. DON does not show any additive effect on reduction of cell viability when it was assayed with BEA from 24 to 72h, compared to DON alone. A reduction on cell viability was showed by DON combined with T-2 toxin from 24 to 48 h, respect to NR_{50} individually obtained for DON. The highest inhibitory effect observed was after T-2 toxin exposure.

A clear increase of cytotoxicity effect was produce particularly from 24 to 72 h exposure of T-2 toxin combined with DON.Mictures of BEA and T-2 toxin lead to a strong reduction of CHO-K1 cells viability from 24 to 72 h exposure.

So, we can conclude that T-2 toxin presents additive effects in reducing viability CHO-K1 cells at any time of exposure in combination with DON and BEA.

The mixtures of mycotoxins reduce cellular viability in following increasing order: [BEA + DON] = [T-2 toxin + DON] < [T-2 toxin + BEA].

The combination of the three mycotoxins significantly increased in cytotoxicity on CHO-K1 cells in all of the time exposure.