

Cytotoxicity of *Trichoderma* spp. Cultural filtrate against human cervical and breast cancer cell lines

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Abstract

Trichoderma spp. are known as a rich source of secondary metabolites with biological activity belonging to a variety of classes of chemical compounds. These fungi also are well known for their ability to produce a wide range of antibiotic substances and to parasitize other fungi. In search for new substances, which might act as anticancer agents, the overall objective of this study was to investigate the cytotoxic effects of *Trichoderma harzianum* and *Trichoderma asperellum* cultural filtrates against human cervical and breast cancer cell lines (HeLa and MCF-7 cells respectively). To achieve this objective, cells were exposed to 20, 40, 60, 80 and 100 mg/ml of both *T. harzianum* cultural filtrate (ThCF) and *T. asperellum* cultural filtrate (TaCF) for 24h, then the cell viability and the cytotoxic responses were assessed by using trypan blue and 3-(4,5-dimethylthiazol-2yl)-2,5-biphenyl tetrazolium bromide (MTT) assays. Morphological changes in cells were investigated by phase contrast inverted microscopy. The results showed that ThCF and TaCF significantly reduce the cell viability, have cytotoxic effects and alter the cellular morphology of HeLa and MCF-7 cells in a concentration dependent manner. A concentration of 80 and 100mg/ml of ThCF resulted in a sharp decline in the cell viability percent of HeLa and MCF-7 respectively (25.2%, 26.5%) which was recorded by trypan blue assay. The half-maximal inhibitory concentrations (IC₅₀) of ThCF and TaCF in HeLa and MCF-7 were recorded as 16.6, 12.0, 19.6 and 0.70mg/ml respectively by MTT assay. These results revealed that ThCF and TaCF have a substantial ability to reduce the viability and proliferation of human cervical and breast cancer cells.

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Keywords

Cervical and breast cancer cells, Cytotoxicity, HeLa, MCF-7, *Trichoderma*