EVALUATIONS OF PAZOPANIB EFFICACY ON PEDIATRIC SARCOMA CELL LINES

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Abstract:

Sarcomas are cancerous tumors usually located in soft tissues and often affect pediatric patients. Despite the large amount of research surrounding cancer, there is little research pertaining to such pediatric cancers due to their rarity. Efforts are needed to optimize current cancer treatments for pediatric settings. Pazopanib, a tyrosine kinase inhibitor, is FDA approved for various adult malignancies and is in clinical trials for pediatric sarcomas. However, it has been noted that not all patients respond to pazopanib, and many patients can develop resistance. In this project, we sought to determine the efficacy of pazopanib on two sarcoma cell lines – A-204 rhabdoid tumor and SaOS-2 osteosarcoma – using in vitro cytotoxicity assays. Cells were treated with the drug at various concentrations. Cell viability was determined using the CCK-8 assay and spectrophotometry to calculate the IC₅₀ values. The results of this assay indicate that the IC₅₀ value for A-204 cells is 1.31 µM while that of SaOS-2 cells is 106.60 µM, supporting the initial hypothesis that A-204 cells are more sensitive to pazopanib than SaOS-2 cells. A clonogenic assay was also performed to determine the aggressiveness of A-204 cells in response to pazopanib in a dose-dependent manner. The assay used crystal violet staining to observe the colony formation of the cells. From the qualitative result of the image of the stained colonies, it is evident that administering increasing concentrations of pazopanib does affect the aggressiveness of the cells compared to that of the control. This data further confirms the sensitivity of A-204 cells to pazopanib. These tests lay the foundation for future in vivo studies, where imaging biomarkers will be used to identify if a tumor will respond to pazopanib and determine the onset of resistance.