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Advances in Retinoblastoma

Retinoblastoma (RB1) is a progressive cancer which mainly occurs in children, which is caused by genetic or epigenetic alterations that lead to inactivation of both alleles of the RB1 gene. Retinoblastoma accounts for 11% of cancer in the first year of life. Recent studies have suggested the use of intravitreal therapy using VEGF as a photodynamic therapy, however, chemoprophylaxis for tumor treatment regimen still seems to be the best accepted approach for tumor bearing retinoblastoma. Recent studies have suggested that mRNA-365 targets cyclin dependent kinase 6/4 induces tumor progression and yet chemotherapeutic intervention has been the only available method as therapy. We report for the first time in the field of ocular tumors, that the cold atmospheric plasma induces an altered energy metabolism via redox potential and induces specific receptors like TRAIL-R1 to be elevated causing cell death of retinoblastoma cells in vitro. The elevated expression of TNF-associated receptor TRAIL-R1 induces DNA nick and apoptosis possibly via p53 and Nf-kb pathway. The specificity and selectivity of tumor cell death/apoptosis with the use of cold atmospheric plasma suggests that a combination of cold atmospheric plasma along with reduced doses of chemotherapeutic drug will highlight the significance in the treatments of ocular tumors.

Biography

Arpitha Parthasarathy completed her PhD in Biomedical Sciences from Aravind Eye Hospitals, India and Postdoc from National Institutes of health, Maryland. She had her short Postdoctoral stints at GWU and University. She has published in many peer reviewed ophthalmic journals and is now the "Director of Translational and Molecular Biology Research" at Plasma Medicine Life Sciences and heads the Translational and Molecular Biology Division of Jerome Canady Research Institute for advanced Biological and Technical Sciences, USA.

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