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Apoptotic induction and cell cycle arrest of *Rhododendron arboreum* extract in HeLa cervical cancer cells

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Rhododendron arboreum, traditionally used as a folk remedy by the people of North-East India was investigated for its effects on apoptotic induction and cell cycle arrest in Human Cervical Cancer (HeLa) cell line. Cell apoptosis and cell cycle analysis was performed using flow cytometry. Study of the gene expression of proteins involved in apoptosis and cell cycle regulation was carried out using real time PCR technique. MTT assay was used to evaluate cell viability and cytotoxic effect of aqueous-methanol extract of *R. arboreum* was determined. Treatment with the plant extract showed distribution of cells between late apoptotic and necrotic phases and caused cell cycle arrest at the G₀/G₁ phase. *R. arboreum* extract up-regulated the gene expression of caspase 8, caspase 9, caspase 3, p53 and p21, thus indicating a switching on of both the intrinsic and extrinsic apoptotic pathways resulting in DNA damage which in-turn up-regulated p53. There was significant down-regulation in the gene expression of G₀/G₁ phase-related proteins CDK 1, cyclin B1, CDK 4 and cyclin D1 in comparison to untreated HeLa cells, inferring an inhibitory action of the plant extract on the cyclin dependent kinases and activation of cell cycle checkpoints. Results demonstrated that *R. arboreum* could be a potential anti-cancer agent by its mechanism of inducing apoptotic cell death and cell cycle arrest in HeLa cells.

Biography

V Saio has completed her PhD in Biochemistry from the North Eastern Hill University, India. She is presently working as a Young Professional-II in the Division of Animal Health, Indian Council of Agricultural Research for North Eastern Hill Region, Meghalaya, India. She has attended and presented papers in seminars, published four papers in national and international journals. She has strong domain knowledge with experiences in a wide range of laboratory techniques including enzymology, molecular biology, bioassay development, cell culture and handling of modern advanced scientific instruments. Her current work involves bioassay study of medicinal plants of North Eastern region of India in relation to their cytotoxicity, antimicrobial properties, antiviral properties, anticancer properties and subsequent chemical analysis of the plants to isolate and identify active principles.

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