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Cytotoxicity of silver nanoparticles synthesized by *Catharanthus roseus* aqueous extract on Jurkat and HT29 cancer cell lines

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Interest in silver nanoparticles and their potential medical applications has increased in recent years due to its unique characteristics. The objective of the present study was to evaluate the cytotoxic effects of a green synthesis of silver nanoparticles (AgNPs) using *Catharanthus roseus* (*C. roseus*) aqueous extract on Jurkat (human acute T-cell leukemia) and HT29 (human colorectal adenocarcinoma) cell lines. The assays used were MTS [3-(4, 5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium/phenazine metho sulfate], annexin V-FITC/propidium iodide, DNA fragmentation and cell cycle. The IC_{50} values obtained from MTS assay were 6.7 to 7.4 $\mu\text{g/ml}$ for Jurkat cells while 13.0 to 13.5 $\mu\text{g/ml}$ for HT29 cells at various incubations. Flow cytometric analysis demonstrated higher percentages of early (annexin V-FITC+/PI-) and late (annexin V-FITC+/PI-) apoptotic cells in response to *C. roseus*-AgNPs, as compared to untreated cells. This is further confirmed by the detection of DNA fragments. The induction of apoptosis was associated with cell cycle arrest. These data indicated that *C. roseus* contains active compounds responsible for the AgNPs synthesis and its anticancer activity on Jurkat and HT29 cells, which can be applicable for therapeutic purposes.

Biography

Nor Hazwani Ahmad is a senior lecturer at Cluster for Oncological and Radiological Sciences, Advanced Medical and Dental Institute (AMDI), Universiti Sains Malaysia (USM). She earned her Bachelor in Biomedicine with First Class Honours from Management and Science University (MSU) and she obtained her PhD in Cancer Immunology from USM in 2013. Her research interests include cytotoxicity study in cancer research, particularly involving the downstream apoptosis mechanisms in cancer cells induced by plant extracts. She has secured a Science Fundgrant under the Ministry of Science, Technology and Innovation (MOSTI) as principal investigator.

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