

Micronutrient pyridoxal phosphate has been induced apoptosis, cell cycle arrest and protein expression pattern in cancer cells: In Vitro study

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ABSTRACT

Breast cancer disease burden is being constantly increasing due to various factors in spite of several efforts that have been in progress to cure it. Chemotherapy is a prime option for treatment strategy, but which is associated with adverse effects. Due to this, there is a search and need to explore alternative agents associated with minimal or lesser side effects. Micronutrients are appropriate options for this line of thinking and proved with minimal unwanted effects. Here, we have assessed the anticancer activity of micronutrient pyridoxal 5' phosphate (PLP) is one of the forms of vitamin B6 in human breast cancer cells. The IC50 concentrations were estimated to be $3.60 \pm 0.16\text{mM}$ & $3.26 \pm 0.18\text{mM}$ in MCF-7 & MDA MB231 cell lines. PLP has been arrested cells in G0-G1 phase in MCF-7 cells; whereas S phase in MDA-MB-231 cells was assessed in cell cycle analysis; at the same time it has induced apoptosis activity in both the cell lines. It significantly increased the expressions of P53 and caspase-3 proteins and RNA levels in vitro study. The standard drug tamoxifen was used as positive control for the experiments.

In conclusion, PLP has been shown significant anti-cancer activity in human breast cancer cells.

BIOGRAPHY

Rajanna Ajumeera has his expertise in exploring micronutrients as anti-cancer agents with special focus to target cancer and cancer stem cells for understanding the cellular metabolism and therapy. He has technical expertise with flow cytometry, Western blots, Immunohistochemistry, RT-PCR studies in different cancer cell lines. He has been exploring micronutrients as nutraceuticals for cancer therapy. His special interest would be to target cancer and cancer stem cells with permeation combination of micronutrients along with anti-cancer agents for effective therapeutic strategies to combat disease progression.

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