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Authors: Ravindra Pramod Deshpande, Phanithi Prakash Babu

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Ravindra Pramod Deshpande: ravi.deshpande3@gmail.com;

Department of Biotechnology and Bioinformatics, School of Life Sciences, University of Hyderabad, Hyderabad-500046. Telangana state, India

*Phanithi Prakash Babu: *prakash@uohyd.ac.in;*

Department of Biotechnology and Bioinformatics, School of Life Sciences, University of Hyderabad, Hyderabad-500046. Telangana state, India.

Phone: 040-23134584; Fax: 040-23010120

*Corresponding author

Abstract:

Background: Nitidine chloride (NC) is known to exert anticancer and anti-metastatic effects on a variety of tumors. Recently, NC has also been shown to inhibit PIK3/AKT/mTOR axis in U87 human glioma cells.

Methods: The study shows NC employing pDok2, caspase 3 dependent cell death in C6 rat glioma and U87 human malignant glioblastoma cells. The effect of NC on glioblastoma cell lines was accessed by MTT, clonogenic and wound healing assays. Cell cycle analysis was performed by FACS. Moreover, the effect of NC on downstream target proteins, such as caspase3, pDok2, PARP, and Gsk3 Beta, were measured by western blotting.

Results: Overexpressed pDok2 protein has recently been reported as a prognostic marker with poor outcomes for human glioblastoma multiformae. We found that NC inhibits pDok2 in U87 cells in a concentration-dependent way. We further showed that cleaved PARP and cleaved caspase 3 protein expressions were increased in C6 cells treated with NC in a dose-dependent way. NC effectively attenuated C6 cells growth and colony formation at 8 μM (micromoles) concentration. Cell cycle arrest in G2/M phase was further confirmed by flow cytometry. NC also exhibited its inhibitory effect on Gsk3 Beta, which has been proven to be altered in glioma biology.