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Influence of (*Morinda citrifolia* L.) on Akt induced regulation of COX-2 in Experimental Glioma

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Summary and Conclusion

The prevailing shortcomings of conventional therapies against glioma, an aggressive brain tumour prompted the present investigation to screen *Morinda citrifolia*, for its anti-glial tumour activity anticipating its constructive role in intervention along with the existing therapy. The investigations carried out exhibited the following observations :

- The MRI and histopathological experiments confirm the implantation of c6 cell in the rat and thus the development of glioma model.
- Glioma induced rats showed significant variations in the activities of pathophysiological enzymes and antioxidant enzymes, whereas treatment with Noni extract restored their activities almost close towards that of normal animals.
- Histopathological features of glial tumour rat brain was found to be relatively attenuated in drug treated rats reflecting the potential of methanolic extract of *Morinda citrifolia* against glioma induced tissue variations.

- Transmission electron microscopic study seems to present positive potential of methanolic extract of *Morinda citrifolia* depicting the signs of apoptosis in otherwise programmed cell death escaping tumor cells.
- Results reveal the modulating effect of methanolic extract of *Morinda citrifolia* on the activity of PI3K (proto-oncogene).
- Results reflected the potential of methanolic extract of *Morinda citrifolia* against glioma with respect to the expression of COX-2, PI3K and Akt (both at the level of mRNA and protein) as well as the product of COX-2, namely PGE_2, a major prostaglandin essential for progression of tumor.

Conclusion

The block of PI3K/Akt as observed from the relatively reduced expressions of PI3K and Akt on *Morinda citrifolia* (Noni) administered glioma model and perhaps the Akt regulated expression of COX-2, which also registered a decreased expression in the study were putatively seem to be involved in mediating the tumor attenuating effect of Noni, as supported by biochemical, microscopical observations, on C6 glioma cells induced brain changes in rats.

The current investigations, for the first time, reveals the potential of *Morinda citrifolia* (Noni) in minimizing the glial tumor related changes in rat brain, perhaps by its influence on the survival of cells of aggressive glioma.

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