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EFFECT OF CURCUMIN ANALOG (PAC) ON THE DNA REPAIR PATHWAY GENES EXPRESSION IN HUMAN BREAST CELLS

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Background: Breast cancer is a multifactorial disorder with genetic alteration and environmental factors as well as the most commonly diagnosed life-threatening malignancy in females. Moreover, even if there is development in BC treatments till date, there are still limitations in the efficiency of these treatments. To this end, scientists try to revisit tradition medicine, and attention has been drawn to natural products such as curcumin and their analogues due to their anti-cancer effect and their safety. In the present study, we investigated the effect of curcumin analogue 3, 5-Bis (4-hydroxy-3-methoxybenzylidene)-N-methyl-4-piperidone (PAC) on the DNA repair pathway in human breast cancer cells.

Methods: *In vitro* cultures of human MCF-7 and MDA-MB231 were exposed to PAC. Subsequently, DNA repair signalling pathways were evaluated by PCR arrays focused on genes related to DNA repair pathway, and we confirmed the PCR array results by RT-PCR.

Results: Curcumin analogue (PAC) affected the expression of multiple genes involved in the DNA repair pathway in breast cancer cell line. Our results indicate that PAC observed up-regulation of 16 genes in MDA-MB 231, six genes in MCF-7 and ERCC1, PNKP, MPG and RAD54L being upregulated in both MCF-7 and MDA-MB 231 cells.

Conclusion: Our results indicated that PAC significantly up-regulated multiple genes involved in the DNA repair pathway which certainly open new incites in cancer prevention and maintenance of genome stability. We suggest that PAC could use as a complementary treatment for cancer protection by modulation of these genes.

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