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Combinatorial therapeutic effects of curcumin and thymoquinone on experimentally induced hamster buccal pouch carcinoma

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Background: One of the most challenging tasks concerning cancer is to induce apoptosis in malignant cells and development of new tumor targeted agents focus on apoptosis both curcumin (CU) and thymoquinone (TQ), natural compounds has chemopreventive properties, which are mainly due to its ability to arrest cell cycle and to induce apoptosis.

Objectives: The aim of this study was to evaluate effects of a combined treatment using CU & TQ on the expression pattern of cell proliferative (proliferating cell nuclear antigen (PCNA) and apoptotic (Bcl-2) markers during 7,12-dimethylbenz [a] anthracene (DMBA)-induced hamster buccal pouch carcinogenesis.

Methods or Experimental Design: Hamsters were divided into five groups of 5 animals in each. Group-1 was served as an untreated control. Group-2 hamsters were painted with 0.5% DMBA in liquid paraffin on the left buccal pouches three times a week for 14 weeks. Group-3 hamsters were receiving CU treatment for 6 weeks following DMBA painting. Group-4 hamsters were receiving TQ treatment for 6 weeks following DMBA painting. Group-5 hamsters were receiving both CU and TQ treatment for 6 weeks following DMBA painting. The experiment was terminated at the end of 14 weeks for control group and 18 weeks for treatment groups. The experimental animal's tumors were subjected into morphological examination and subsequently screened the pathological changes and estimate of cell proliferative and apoptotic.

Results: We were able to demonstrate that combination of TQ and CU was well tolerated and significantly reduced tumor volume without additional toxicity to the mice $P=0.002$. CU & TQ was able to reduce or inhibit cell proliferation ($P=0.000$), reduce cell viability and induce apoptosis ($P=0.000$). There was highly statistically significant positive correlation found between BCL2 and PCNA ($r=0.956$, $p<0.001$).

Conclusion: The present study suggests that CU & TQ might have inhibited the tumor formation by exerting anti-cell-proliferative and apoptotic potential after DMBA-induced hamster buccal pouch carcinogenesis.

Biography

Mohamed Mahmoud Ahmed is an Associate Professor in Oral & Dental Pathology Department, Al-Azhar University, Egypt. He has many article publications to his credit. He has a great experience and role in the field of Dentistry.

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