Fatemeh Alibeiki, J Cancer Sci Ther 2017, 9:9(Suppl)
DOI: 10.4172/1948-5956-C1-112

Anti-cancer effects of less polar Curcumin analogues on gastric adenocarcinoma and esophageal squamous cell carcinoma cells

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Curcumin and its chalcone derivatives inhibit the growth of human cancer cells. It is reported that replacement of two OH groups in curcumin with less polar groups like methoxy increases its antiproliferative activity. In this study, we explored benzylidene cyclohexanone derivatives with non-polar groups, to see if they possess increased anti-cancer activity. Novel 2,6-bis benzylidene cyclohexanone analogues of curcumin were synthesized, and their inhibitory effects on gastric adenocarcinoma (AGS) and esophageal squamous cell carcinoma (KYSE30) cancer cells were studied using an MTT assay. Cell apoptosis was detected by EB/AO staining, and cell cycle was analyzed by flow cytometry. Real-time PCR was performed for gene expression analysis. All synthesized analogues were cytotoxic toward gastric and esophageal cancer cells and showed lower IC50 values than curcumin. Treatment with 2,6-Bis-(3-methoxy-4-propoxy-benzylidene)-cyclohexanone (BM2) was 17 times more toxic than curcumin after 48 h incubation. All novel compounds were more effective than curcumin in apoptosis induction and cell cycle arrest at G1 phase. These results suggest that less polar analogues of curcumin have potent cytotoxicity *in vitro*. However, they need to be investigated further, especially with animal tumor models, to confirm their chemotherapeutic activity *in vivo*.

Biography

Fatemeh Alibeiki has been studying at Ardabil University of Medical Sciences, Iran. Currently, she is in her final year of education as a medical student. So far, she has published two papers in high-profile journals. Participating in numerous conferences and workshops is one of her interests and has done so, on a regular basis throughout the years as a student which brought her experience, extensive knowledge and so many scientific certificates. She has also associated with different groups in her university that resulted in holding several conferences and meetings.

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