INHIBITION OF CANCER CELL PROLIFERATION BY COLOR MODULATION: A PILOT STUDY

X. Li, L. Zhang, Y. Li
Oncology dept. of Chengdu Fuxing Hospital, Chengdu, China

Background: Color, which is an electromagnetic wave, can carry biological information and signals. Thus, modulating color means changing interactive signals among cells. The color of tumor tissue differs from that of normal tissue. However, the relationship between color variation and its effect on tumor growth remains unclear. In this study we found that altering the color of cancer cells had an inhibitory effect on cancer growth.

Methods: We evaluated the extent to which a novel drug (MitcaFx, concentration of 0.034mol/ml) could alter the color of cancer cells and inhibit tumor growth using in vitro CT26 and H22 tumor models and a classic in vivo xenograft model of hepatocellular cancer.

Results: CT26 and H22 cells are both white in nature but became yellow when exposed to MitcaFx in vitro. The MTT assay, wound healing assay, and transmission electron microscopy showed a time- and dose-dependent effect of treatment with MitcaFx in the form of significant inhibition of cell viability and migration accompanied by altered ultrastructure of the mitochondria, nucleus, and microvilli. Flow cytometer analysis indicated that the cell cycle was arrested at S phase and that the SSC value fell dramatically, but the FSC value remain fixed and a peak in apoptosis did not occur. In vivo, the xenograft tumor model showed a 100% reduction in growth of malignant ascites and survival of more than 11 weeks compared to the control, with an average of 22 ml malignant ascites and less than 3 weeks survival.

Conclusion: Taken together, our results indicate that a tumor’s color might be related to its biological behavior. Therefore, MitcaFx, which can modulate the color of cancer cells, led to a significant reduction in tumor growth in vitro and in vivo. MitcaFx may prove to be an effective new strategy for treating human cancer and have broad implications in oncology.