Ascorbate Depletion Increases Growth and Metastasis of Melanoma Cells in Vitamin C Deficient Mice

J. Cha, M.W. Roomi, V. Ivanov, T. Kalinovsky, A. Niedzwiecki, M. Rath
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This in vivo study was conducted on a special type of mouse model. Just like humans, these mice do not produce their own vitamin C. They were therefore the best model to study how dietary supplementation with vitamin C would alter the growth and spread of induced cancer cells.

Our results indicate that vitamin C significantly impaired the growth of cancer cells in the mice given dietary vitamin C supplementation, as opposed to the control group that did not receive vitamin C. The tumors in the vitamin C supplemented mice were 64% smaller than the tumors developed in the control group. Microscopic examination of the tumors in the group supplemented with vitamin C showed that they were surrounded by denser collagen fibers and were well capsulated, indicating reduced potential for metastasis. The mice that did not receive dietary vitamin C developed larger tumors and the borders were poorly defined with actively multiplying cells.

Moreover, the markers of inflammation like interleukin-6 and interleukin-1β were profoundly decreased (90% and 62%, respectively) in the vitamin C supplemented mice as compared to the control group.