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Curcumin inhibits tumor growth and angiogenesis in glioblastoma xenografts.

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Among the natural products shown to possess chemopreventive and anticancer properties, curcumin is one of the most potent. In the current study, we investigated the effects of this natural product on the growth of human glioma U-87 cells xenografted into athymic mice. We show here that curcumin administration exerted significant anti-tumor effects on subcutaneous and intracerebral gliomas as demonstrated by the slower tumor growth rate and the increase of animal survival time. While investigating the mechanism of its action in vivo, we observed that curcumin decreased the gelatinolytic activities of matrix metalloproteinase-9. Furthermore, treatment with curcumin inhibited glioma-induced angiogenesis as indicated by the decrease of endothelial cell marker from newly formed vessels and by the diminution of the concentration of hemoglobin in curcumin-treated tumors. We also demonstrate, using an in vitro model of blood-brain barrier, that curcumin can cross the blood-brain barrier to a high level. These are the first results showing that curcumin suppresses tumor growth of gliomas in xenograft models. The mechanisms of the anti-tumor effects of curcumin were related, at least partly, to the inhibition of glioma-induced angiogenesis.

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