

Antitumor Effects of Resveratrol on MCF-7 Cells occur through Casein Kinase II Activity Inhibition

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Resveratrol is a phytoalexin found in grapes and other foods that has been shown to have anticancer and anti-inflammatory effects. Protein kinase II (CKII) is a serine/threonine protein kinase found in all eukaryotes cells that plays a critical role in cell proliferation and oncogenesis. In the present study, we investigated that effect of resveratrol, at least in part, may occur through an inhibition on CKII activity on breast cancer MCF-7 cells. The cells were treated with different concentrations of resveratrol (0 – 400 μM) during 24h and 48h of growth. The MCF-7 viability was decreased in a time and dose dependent manner with an IC_{50} of 238 μM and 151 μM for 24 and 48 hours respectively. The toxicity observed with 100 μM to 300 μM was partially reverted when the resveratrol was removed to the cell culture. Considering that CKII has emerged as a key protein involved in cell growth and proliferation we examined the effect of resveratrol on the phosphorylation of substrates by endogenous CKII in MCF-7 cell treated with 50 and 200 μM of resveratrol. These results show that concentrations of resveratrol that induce decreased of cellular viability is associated with inhibition of CKII activity. On the other hand, western blotting does not demonstrated the difference on CKII expression in the cells treated with resveratrol. Taken together, these results suggest that resveratrol decrease the breast cancer MCF-7 cellular viability, at least in part, through the inhibition of CKII activity but not your expression.

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