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Autophagy effects of pterostilbene on human oral cancer cells through modulation of Akt and mitogen-activated protein kinase pathway

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Objectives: Extensive research supports the administration of herbal medicines or natural foods during cancer therapy. Pterostilbene, a naturally occurring phytoalexin has various pharmacological activities including antioxidant activity, cancer prevention activity and cytotoxicity to many cancers. However, the effect of pterostilbene on the autophagy of tumor cells has not been clarified.

Materials & Methods: In this study, the unique effects of pterostilbene on the autophagy of human oral cancer cells were investigated.

Results: The results of this study showed that pterostilbene effectively inhibited the growth of human oral cancer cells by inducing cell autophagy. In addition, the formation of acidic vesicular organelles (AVO) and LC3-II production also demonstrated that pterostilbene induced autophagy. Pterostilbene-induced autophagy was triggered by activation of JNK1/2 and inhibition of Akt, ERK1/2, and p38. Administering specific MAPK inhibitors exerted differing effects on the pterostilbene-induced death of human oral cancer cells.

Conclusion: This study demonstrated that pterostilbene caused autophagy in human oral cancer cells suggesting that pterostilbene could serve as a new and promising agent for treating human oral cancer.

Biography

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