Abstract

Comparatively Investigation of Antitumor Activities of Resveratrol and Paclitaxel through Apoptosis and Autophagy in A549 Cells †

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Abstract: Resveratrol, a natural product, has many biological effects including antitumor effects. Paclitaxel, a chemotherapeutic drug, has been widely used in the treatment of lung cancer. Although the antitumor effects of resveratrol and paclitaxel in A549 cells have been studied in separately before, in this study comparatively investigation the anticancer effects of resveratrol and paclitaxel on the apoptosis and autophagy in A549 cells is aimed. The effects on A549 cell viability of resveratrol and paclitaxel (Taxol) were determined by MTT assay. mRNA transcription levels of Bax, Bcl-2 and caspase-3 and protein expression levels of Bax, Bcl-2 and LC3-II were determined by RT-qPCR and western blot analysis, respectively. Our results demonstrated that resveratrol and paclitaxel inhibited the viability of A549 cells. RT-qPCR and western blot analysis showed that paclitaxel stimulated apoptotic cell death in A549 cells by more increasing pro-apoptotic Bax and caspase-3 levels and by more decreasing anti-apoptotic Bcl-2 level in comparison with resveratrol. On the other hand, resveratrol stimulated autophagic cell death by more increasing the level of an autophagic marker LC3-II compared to paclitaxel. In conclusion, we showed that resveratrol exerts its antitumor effects through the induction of autophagy in A549 cells compared to paclitaxel. However, it should be investigated the synergistic effects of resveratrol in combination with paclitaxel on A549 cells. Thus, resveratrol may enhance the effect of paclitaxel on apoptosis by inducing autophagy in A549 cells.

Keywords: A549; apoptosis; autophagy; paclitaxel; resveratrol

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