
The extract from Punica granatum (pomegranate) peel induces apoptosis and impairs metastasis in prostate cancer cells.

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Abstract
Prostate cancer is a big threat to male for its poor prognosis and high mortality rate. Natural compounds are important resources of many anticancer drugs. Pomegranate is a kind of antioxidant-rich fruit and its peel and seed has potential anticancer activities. In this study, we aimed to investigate the effects of pomegranate peel extract (PoPx) on the apoptosis and metastasis of prostate cancer cells and the related mechanism. We found that PoPx showed growth inhibition on prostate cancer cells. Nuclei morphological and flow cytometer (FCM) analysis indicated that PoPx could induce prostate cancer apoptosis. Further investigation indicated that mitochondrial mediated intrinsic pathway is involved in the apoptosis. Exposure to PoPx led to loss of mitochondrial transmembrane potential (Δym), accumulation of reactive oxygen species (ROS). Western blot analysis showed that PoPx could increase the expression ratio of Bax/Bcl2 and activation of apoptosis executor caspase 3. Wound healing assay and transwell migration and invasion assay implied that PoPx has the potential to inhibit migration and invasion, two critical steps in prostate cancer metastasis. Downregulation of MMP2/MMP9 and upregulation of TIMP2 showed accordance with the inhibition of migration and invasion. In summary, the present data showed that PoPx could be a promising drug candidate to treat prostate cancer, showing us a better way to develop novel drugs from natural compounds.

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