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THE EFFECT OF OLIVE EXTRACT AND ITS ACTIVE COMPOUND, HYDROXYTYROL ON HUMAN NASAL RESPIRATORY EPITHELIUM

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SUMMARY

Prolong insults by pathogenic agents on respiratory epithelium will cause epithelium damage and will lead to chronic inflammation (rhinosinusitis). Olive is known to have anti-inflammatory properties and contains beneficial phenolic compounds such as hydroxytyrosol (HT). However, the benefits of olive extract (OE) and HT on human nasal respiratory epithelium (RECs) have not yet been studied. This study aims to investigate the effect of olive and its active compound on RECs. RECs were isolated and divided into 3 groups: untreated RECs (control), OE treated RECs (OE), and HT treated RECs (HT). The effects of OE and HT to RECs on growth kinetics, morphology, and expression of CK14, CK18, MUC5AC, E-cadherin and vimentin were evaluated. Short-term exposure (24hrs) of OE and HT on RECs showed that the viability of RECs was concentration dependent with IC50 of 0.69% and 42 ng/ml for OE and HT respectively. 0.05% (v/v) of OE increased cell viability significantly compared to control. There were no significant changes in the viability of RECs that has been exposed to HT with concentration lower than 5ng/ml for 24hrs. Longer exposure (120 hrs) of RECs to 0.1%, 0.2% and 1% of OE significantly reduced total number of attached cells compared to control group and 1% OE inhibited RECs' proliferation. There were no differences between 0, 0.25, 0.1, and 1 ng/ml HT treated RECs up to 120 hrs . Besides that, HT and OE treated RECs retained their epithelial markers. Several study have shown that there are increase expression of vimentin marker in rhinosinusitis patients. Surprisingly, OE treatment significantly reduced vimentin expression compared to control and 0.2% (v/v) OE treated cells showed the lowest vimentin expression. Meanwhile, 1 and 10 ng/ml of HT showed the lower expression of vimentin compared to control. As conclusion, viability of OE and HT are concentration-dependent. Both of them does not cause changes to the epithelial marker and they also reduced vimentin expression which shows its ability to modulate inflammation.

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