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The Effect of Olea europea L. Extract on Doxorubicin-Induced Cardiotoxicity

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Abstract : Doxorubicin is an anthracycline that is commonly used as a chemotherapy drug due to its cytotoxic effects. The clinical use of doxorubicin is limited due to its known cardiotoxic effects. Polyphenols have a wide range of beneficial properties, and particular importance is given to Oleuropein, one of the main polyphenolic compounds of olive oil. The biological mechanisms involved and the role of the endoplasmic reticulum were examined. Olive oil extract and Oleuropein were able to decrease the damage induced by exposure to doxorubicin. In particular, this natural compound was found to reduce cell mortality and oxidative damage, increase lipid content, and decrease the concentration of calcium ions that escaped from the endoplasmic reticulum. In addition, the direct involvement of this cellular organelle was demonstrated by silencing the ATF6 arm of the Unfolded Protein Response, which was activated after treatment with doxorubicin. The protection afforded by pre-treatment with the natural compound of interest, following the early damage induced by DOXO, provided valuable information regarding the potential use of these substances along with chemotherapy treatment.

Keywords : Olea europea L., oleuropein, doxorubicin, endoplasmic reticulum, nutraceutical support
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