

A549 AS A SUITABLE MODEL FOR SCREENING ANTIOXIDANT ACTIVITY OF TEUPOLIOSIDE

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Abstract:The aim of this study was to set up a biological model for screening the antioxidant activity of natural products extracted from plant cell lines such as Teupolioside, a phenylpropanoid produced from *Ajuga reptans* as a secondary metabolite.

To this purpose we used two cell lines A549 from human lung adenocarcinoma and 143B from human osteosarcoma. In both these cells we measured basal production of reactive oxygen species (ROS), enzymatic defences such as Superoxide dismutase, GSH-peroxidase, GSH-reductase and GSH-transferase, as well as non-enzymatic defences represented by GSH/GSSG ratio. The preliminary results show a similar production of basal ROS in both human cell lines, on the other hand A549 cell line exhibits a significantly higher amount of antioxidant defences. This last can be related to different physiological properties of lung cells due to the higher oxygen exposure with respect to bone cells. For this reason we choose A549 as a suitable model for screening the biological activity of new antioxidants.

To study the antioxidant effect of Teupolioside, we induced oxidative stress in A549 by using BSO (Buthionine sulfoximine), an inhibitor of GSH synthesis. The production of ROS in A549 cell line after stress with BSO for 24h was twice with respect to the basal one and the co-treatment of BSO and 2 micromolar Teupolioside counteracted the ROS production. A similar prevention of ROS production can be obtained after co-treatment of BSO and 2 micromolar Trolox a soluble derivative of vitamin E.