

## Comparative evaluation of the antioxidant and prooxidant status during the growth of cultured plant cells of two strains of *Polyscias filicifolia* and *Polyscias filicifolia* LX-5

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**Keywords:** tissue culture of a medicinal plant poliscias, antioxidant enzymes, oxidative protein modification, acid soluble peptides.

### Abstract

Cell cultures of plants are widely used as a model, which allows to evaluate adequately the metabolic processes in plants and their responses to various external influences, to study many physiological and biochemical processes in plants. It is known that cells actively proliferating outside the body contain a high level of activity of antioxidant enzymes. During the process of dividing cultured cells in the presence of oxygen, free oxygen radicals are generated, the excess of which is controlled by a reliable antioxidant defense system. Therefore, the assessment of biochemical equilibrium in this system, in our opinion, can be an objective marker indicator of the physiological stability of cells, which is extremely important, both theoretically and practically. In recent years, studies of organogermanium compounds with low toxicity and a wide spectrum of biological activity are one of the promising trends in modern chemistry of organogermanium compounds. In our study, it was shown that the activity of antioxidant enzymes in callus cells increased on average by 11% (SOD), 18.6% (peroxidase) and 26.5% (catalase) after polyscias tissue culture being transferred to a selective medium enriched with germanium by an organic compound. In the process of growth of cells of the initial and selective polyscias strains, the oscillatory nature of the change in the catalytic activity of the three main enzymes of the antioxidant system can be noted. The nature of these changes correlated with changes in the mitotic activity of the cells. The degree of oxidative modification of proteins in cells of both strains of polyscias tissue culture also correlated with the level of their mitotic activity.

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