EVALUATION OF PROTECTIVE ACTIVITY OF APIIN EXTRACTED FROM PETROSELINUM CRISPUM AGAINST OXIDATIVE STRESS


1Laboratório de Estresse Oxidativo em Microrganismos (LEOM), Departamento de Química, UFRRJ, Seropédica, Brazil. 2Laboratório de Química de Produtos Naturais Bioativos (LQBioN), Departamento de Química, UFRRJ, Seropédica, Brazil.

Introduction and objectives: Petroselinum crispum (Mill.) (parsley) an ordinary herb of the Apiaceae family, is a carminative, antiseptic, and anti-inflammatory agent and is used for the treatment of gastrointestinal disorders, hypertension, and diabetes. The flavonoids apigenin and apiin are the active compounds indentified in P. crispum and studies have shown their potential antioxidant properties. However, there are few studies investigating the antioxidant activity of apiin in cellular models. The objective of this study was to evaluate the antioxidant activity of apiin and apigenin in Saccharomyces cerevisiae cells under oxidative stress conditions.

Materials and methods: Leaves from P. crispum were triturated and extracted by decoction. After the extract filtration, a spontaneous precipitation at room temperature yielded a product that was separated by centrifugation, and purified by liquid chromatography. This procedure yielded a powder that was characterized by NMR and MS. Apigenin and apiin solutions were prepared in dimethyl sulfoxide. The cells in the first growth phase were incubated with the compounds for 1 hour, centrifuged, washed, and re-suspended in culture medium containing hydrogen peroxide (1,0mM). After 1 hour under oxidative stress, the cells were collected and plated on solid YPD2% to determine cell viability. Malondialdehyde was quantified by the TBARS method.

Results and conclusions: The exposure to different concentrations of apiin showed decreased time-dependent toxicity and a dose-dependent effect. The concentration of 0,1mM was used in cell viability and lipid peroxidation (TBARS) assays. Cell viability after incubation with hydrogen peroxide increased from 62,43% to 83,25% in cells pre-incubated with apiin. In addition, the cell viability increased when the cells were pre-incubated with apiin and apigenin before the oxidative stress, indicating a synergism between the two compounds. The decrease of approximately 50% in the levels of lipid peroxidation confirms that apiin has antioxidant activity.

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Key Words: antioxidants, apiin, apigenin.