Antioxidant Activity of Vitexin and Isomers (Isovitexin and Vitexin)-2”-*O*-α-*L*-rhamnopyranoside from *Clusia lanceolata* in *Saccharomyces cerevisiae* Cells

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Introduction and Objectives: In this study, the phytochemical investigation of *Clusia lanceolata* Cambess (beach onion) leaves yielded fourteen compounds, including six flavones: vitexin, isovitexin, vitexin-2”-*O*-α-*L*-rhamnopyranoside, isovitexin-2”-*O*-α-*L*-rhamnopyranoside, orientin and isoorientin. Previous results of the crude extracts of *lanceolata* leaves showed antioxidant capacity *in vitro*. In this work, the objective is to analyse the antioxidant capacity *in vivo*, using vitexin and a mixture of isomers (isovitexin and vitexin)-2”-*O*-α-*L*-rhamnopyranoside in *Saccharomyces cerevisiae* cells under oxidative stress.
Materials and Methods: *Clusia* leaves were collected at Grumari-RJ and the botanical material was processed in the UFRRJ’s herbarium. Biological analysis of the sample was done after extraction, separation and identification using thin layer chromatography and spectroscopic analyses techniques. To test the antioxidant activity, cells in exponential growth phase were preincubated with vitexin and a mixture of isomers (25µg/mL each) for 2h. Thereafter, the cells were collected and plated on solid medium to determine the toxicity of these substances. Furthermore, cells were washed and incubated with hydrogen peroxide (1.0mM) for 1h. Subsequently, cell viability, mitochondrial dysfunction and catalase activity were determined. The results were compared to control cells and cells under oxidative stress.
Results and Conclusions: The cells pretreated with vitexin and isomers did not show toxicity to the yeast in the concentration used. The results of cell viability with vitexin revealed an increase of survival after oxidative stress (59.83 ± 2.92% for 100.00 ± 2.84%), while a mixture of isomers significantly improved the survival (116.49 ± 5.08%). In accordance with this result, mitochondrial dysfunction caused by H_2O_2 was reversed to the levels of control cells with vitexin and a mixture of isomers. However, catalase activity was not changed by the presence of substances, and it is being tested with cells in stationary phase. So far, vitexin and isomers showed a high antioxidant potential, especially the mixture of isomers, showing an important role for these molecules.

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