INHIBITION OF GROWTH OF SACCHAROMYCES CEREVISIAE INDUCED MENADIONE, EVALUATING THE PROTECTIVE EFFECT OF PROBUCOL

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Introduction: Menadione is extensively used in the study of oxidative stress, since it generates ROS by redox cycling process that produces superoxide radicals and direct covalent bond with cellular thiols such as GSH. Objective: Considering the involvement of oxidative stress in several diseases, the aim of this study was to investigate the possible protective effect of Probucol, a compound that exhibits anti-inflammatory and antioxidant properties, on the growth inhibition of Saccharomyces cerevisiae induced by exposure to menadione. Materials and methods: Saccharomyces cerevisiae wild type strain By4741 was exposed to different treatments: control group; Menadione (75 µM); Probucol (4, 16, 64, 128 and 256 µM) and Menadione (75 µM) plus Probucol (at different concentrations). After incubation at 30 ºC for 24 h in an orbital incubator with shaking at 250 r.p.m., the yeast growth was evaluated spectrophotometrically by measuring the absorbance of the sample at the wavelength 600 nm. Results: The results showed that exposure to menadione caused inhibition of Saccharomyces cerevisiae growth. Probucol, at all concentrations tested, was able to protect from menadione-induced Saccharomyces cerevisiae growth inhibition. Menadione is a well known ROS generator, suggesting that its inhibitory effect on Saccharomyces cerevisiae growth can be caused by excessive ROS production. Conclusion: In this way, these preliminary results indicate the potential protective effect of probucol in prevent menadione-induced Saccharomyces cerevisiae growth inhibition which could be attributed to its antioxidant properties. Further experiments will be necessary to confirm the exact mechanism involved with probucol protective effect.

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KEYWORDS: Probucol, Menadione, Saccharomyces Cerevisiae.