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Cell death profile induced by acetic acid in *Saccharomyces cerevisiae* can be reversed by ethanolic extract of *Portulaca oleracea* L.

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Cell growth of *Saccaromyces cerevisiae* is often inhibited by acetic acid when it is associated with high levels of ethanol and other toxic metabolites which block fermentative metabolism by means of feedback mechanisms. Purslane (*Portulaca oleracea* L. var. sativa) is a green leafy vegetable, used widely in regional dishes, that has a high content and great diversity of biologically active phytochemicals. The fertilisation of purslane using NH_4NO_3 (60 kg/ha) was found to positively influence its production without negatively impacting its functional value. The simultaneous exposure of *S. cerevisiae* UE-ME$_3$ to 25 mM acetic acid and 2% (v/v) purslane-leaf extract with high antioxidant activity, during 200 min, resulted in the maintenance of the biomass produced, cell viability, oxidative stress level, antioxidant enzyme activities ALP, GPx and CTA1 and cell damage levels approximate to those of the control group, as well as leading to an increase in GR and SOD1 antioxidant activities. Thus, ethanolic extract of purslane leaf seems to counteract the cell death signature induced by 25 mM acetic acid.

Keywords yeast; purslane; cell damage; glutathione; glutathione enzymes; alkaline phosphatase

1. Introduction

Saccharomyces cerevisiae exhibits stress response mechanisms that are in many cases identical to those of higher eukaryotes [1]. Tests for evaluating the oxidant/antioxidant activity of numerous chemicals including the