

Methylglyoxal metabolism in seaweeds during desiccation [Metabolismo de metilglioxal en macroalgas durante desecación]

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In primary producers, diverse stressors cause an over-production of methylglyoxal (MG), which is principally detoxified by glyoxalase I (GLO1) activity. A recent proteomic study found that GLO1 was up-regulated during natural desiccation in the red seaweed *Pyropia orbicularis*, which inhabits the upper intertidal rocky zone and compared to other species, is highly tolerant to air exposure. To better understand and determine differential responses to desiccation stress, this study evaluated MG concentration and GLO1 activity in two species with contrasted vertical distribution, *P. orbicularis* and *Lessonia spicata* (lower distribution). Results showed that *P. orbicularis* successfully scavenges MG via increased GLO1 activity during desiccation. In contrast, GLO1 activity in *L. spicata* did not increase during desiccation, resulting in MG overproduction. This study is the first to quantify MG and GLO1 levels in seaweeds during natural stress, and partly explain the mechanisms by which *P. orbicularis* is dominant in the upper rocky intertidal zone. © 2016, Universidad de Valparaiso. All Rights Reserved.

Desiccation

Glyoxylase I

Lessonia

Methylglyoxal

Pyropia

alga

desiccation

enzyme

metabolism

organic compound

proteomics

seaweed