

A HIGH VALUE OF THE RATE CONSTANT FOR SINGLET OXYGEN REACTION OF MYCOSPORINE GLYCINE APPEARS RELATED TO ITS FUNCTION AS AN EFFICIENT PHOTOPROTECTANT

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This report concerns physiological function of mycosporine-like amino acids (MAA) as an active defense against photooxidative sunlight effects in marine organisms. In biological model systems, such as *Escherichia coli*, erythrocytes, mitochondrial membranes and lactate dehydrogenase, mycosporine glycine (MG) that is a representative member of MAA family was found to efficiently suppress detrimental effects of the type I photosensitization. The presence of MG in aqueous solutions of eosin Y resulted in a marked decrease in the level of singlet oxygen (1O_2) produced by the dye under illumination. The rate constant for reaction of MG with 1O_2 was determined to be $6.7 \times 10^7 M^{-1} s^{-1}$, which appears larger than, or at least comparable to, the values for such well-known 1O_2 scavengers as histidine, furfuryl alcohol and cyclopentadiene. The results suggest that MG probably together with some other active MAA may play an important role in protecting marine organisms against sunlight-damage by eliminating 1O_2 generated from certain endogenous photosensitizers.