

Ohr (organic hydroperoxide resistance protein) reacts with Long Chain Fatty Acids Peroxides.

Alegria, T.G.P.^{1*}, Cussioli, J.R.R.¹, Miyamoto, S.², Mascio, P.²; Oliveira, M.A.³; Garrat, R.C.⁴, Valadares, N.F.⁴ and Netto, L.E.S.¹

¹Departamento de Genética e Biologia Evolutiva, IB - USP, São Paulo, Brasil.

²Departamento de Bioquímica, IQ – USP, São Paulo, Brasil.

³Campus Experimental do Litoral Paulista, Unesp, São Vicente, Brasil.

⁴Instituto de Física – Universidade de São Paulo (Campus de São Carlos).

[*thiagoalegria@hotmail.com](mailto:thiagoalegria@hotmail.com)

Oxidative burst is an important defense response of plants against bacterial infection. Lipid hydroperoxides can be generated from the attack of ROS to the bacterial membrane or by enzymatic oxidation of lipids by systems, such as lipoxygenase. To counterattack this oxidative insult, pathogens have developed antioxidant defenses. The Ohr/OsmC family has been characterized as an important defense against organic hydroperoxides, using a highly reactive cysteine thiolate group. Previously, we have performed docking analyses of Ohr and showed that some peroxides derived from unsaturated fatty acids (PUFAs) have a good fitting in active site, and in all cases the peroxide group was pointing toward the reactive cysteine. Here, we report that Ohr from *X. fastidiosa* was able to detoxify peroxides derived from PUFAs such as oleic (OLOOH) and linoleic acid (LOOH), while had no activity towards peroxide derived from cholesterol. steady-state kinetics analysis showed that Ohr was able to detoxify LOOH using lipoamide as thiol-donor. Also, the thiolate from Cys_p61 was rapidly hyperoxidized by relatively low concentrations of LOOH (micromolar range). Also, we observed that Ohr activity decreased more after a pre-treatment with LOOH than with *tert*-butyl hydroperoxide. These results indicated that Ohr has high affinity for hydroperoxides derived from fatty acids and possibly act detoxifying these peroxides *in vivo*.

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