Oxidation of Plasmalogens Produces Highly Effective Modulators of Macrophage Function

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Model derivatives of plasmalogens and chemically synthesized oxidative degradation products as found e.g. during oxidation of low density lipoproteins show strong effects on phagocytosis induced secretion of reactive oxygen species of macrophages which was measured by luminol-enhanced chemiluminescence. Whereas a plasmalogen epoxide showed enhancing effects in submicromolar range, inhibition was found with higher concentrations as well as with α-hydroxyaldehydes. The substances showed only little effects on the non-cellular ROS-dependent chemiluminescence of the reaction between hydrogen peroxide and opsonized zymosan and no cytotoxic effects under the assay conditions used. These results show that oxidative modification and degradation of plasmalogens occuring also under pathophysiological situations *in vivo* produces effective modulators of macrophage function which could be important; e.g. during inflammation or atherogenesis.