Carboxymethylated Glucan Inhibits Lipid Peroxidation in Liposomes

Melánia Babincová\textsuperscript{a}, Eva Machová\textsuperscript{b}, and Grigorij Kogan\textsuperscript{b,*}

\textsuperscript{a} Department of Biophysics and Chemical Physics, Comenius University, Mlynská dolina F1, 842 15 Bratislava, Slovak Republic

\textsuperscript{b} Institute of Chemistry, Slovak Academy of Sciences, Dúbravská cesta 9, 842 38 Bratislava, Slovak Republic. Fax: +421 7 59410222. E-mail: kogan@savba.sk

\textsuperscript{*} Author for correspondence and reprint requests

Z. Naturforsch. 54c, 1084–1088 (1999); received July 5/July 27, 1999

Liposomes, (1→3)-β-D-glucan, Microwave Radiation, Lipid Peroxidation, Membrane Destabilization

Protective capabilities were studied of carboxymethylated (1→3)-β-D-glucan from \textit{Saccharomyces cerevisiae} cell wall against lipid peroxidation in phosphatidylcholine liposomes induced by OH\textsuperscript{−} radicals produced with Fenton’s reagent (H\textsubscript{2}O\textsubscript{2}/Fe\textsuperscript{2+}) and also by microwave radiation using absorption UV-VIS spectrophotometry. A significant decrease in the conjugated diene production, quantified as Klein oxidation index, was observed in the presence of a moderate amount of added glucan. Increase of the oxidation index was accompanied with enhanced carboxyfluorescein leakage as a result of liposome membrane destabilization. This process was markedly suppressed with glucan present in the liposome suspension. Therefore, glucan may be considered as a potent protector against microwave radiation-induced cell damage.