

Protective Effect of Quaternary Piperidinium Salts on Lipid Oxidation in the Erythrocyte Membrane

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A new series of amphiphilic compounds with incorporated antioxidant functional group has been investigated. Piperidinium bromides, differing in the alkyl chain length (8, 10, 12, 14 and 16 carbon atoms in the chain) were synthesised to protect biological and/or model membranes against peroxidation and following negative consequences. Their antioxidant activity was studied with erythrocytes subjected to UV radiation. The salts used inhibited lipid oxidation in the erythrocyte membrane. The degree of this inhibition depended on the alkyl chain length of the bromide used and increased with increasing alkyl chain length. A comparison of the results obtained for piperidinium bromides with those obtained for the widely used antioxidant 3,5-di-*t*-butyl-4-hydroxytoluene (BHT) revealed that only two shortest alkyl chain salts were less efficient than BHT in protecting erythrocyte membranes. A similar comparison with antioxidant efficiency of flavonoids extracted from *Rosa rugosa* showed that they protected the membranes studied more weakly than the least effective eight-carbon alkyl chain piperidinium bromide. The three compounds of longest alkyl chains were the most active antioxidants. Their activities did not differ significantly.

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