Biological Activity of New *N*-Oxides of Tertiary Amines

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Potential biological properties of newly synthesized single and double alkyl chain *N*-oxides of tertiary amines (NTA) were studied. Individual compounds in each of the series had alkyl chains of different length. Various experiments were performed to determine a mechanism of the interaction between NTA and model and biological membranes. These were measurements of hemolytic efficiencies of NTA (pig erythrocytes), their influence on the transition temperatures (DPPC liposomes), on potassium leakage from cucumber, its growth and chlorophyll content (*Cucumis sativus* cv. Krak F1), and on the resting membrane potential in alga cells (*Nitellopsis obtusa*).

Also, prevention of erythrocyte membrane lipid oxidation induced by UV irradiation was studied. Potential antioxidative properties of NTA were additionally tested in radical chromogen ($ABTS^{\bullet+}$) experiments in which antioxidative efficiencies of NTA were compared to that of the standard antioxidant Trolox.

It was found that NTA readily interacted with erythrocyte membranes. Their hemolyzing efficiency increased with the alkyl chain length. Slightly more intensive interaction was found for double alkyl chain compounds. Similar results were obtained in DSC experiments, where incorporation of NTA into liposomal membranes shifted the main transition temperatures and caused a broadening of the main transition peaks depending on the alkyl chain length. Double alkyl chain compounds were also found more efficiently influencing the growth of cucumber. Influence of NTA on the resting membrane potential of algae cells was not quite following the alkyl chain length rule found in erythrocyte and liposome experiments. Also potassium leakage and chlorophyll content determined in physiological experiments were not following the increase of lipophilicity of compounds. Most efficiently influencing those parameters were NTA having shorter alkyl chains, and efficiencies of single alkyl chain compounds were evidently stronger.

Both methods used to test the antioxidative properties of NTA showed that they depended on the alkyl chain lengths of compounds within each series, but double alkyl chain ones exhibited markedly greater efficiency.

Key words: *N*-Oxides, Membrane Activity, Antioxidative Efficiency