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Radiolysis and photolysis of coralyne and sanguinarine water solutions.

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Sanguinarine and coralyne are isoquinoline alkaloids isolated from plants. The use of these alkaloids as medicines by humans dates to several thousands of years ago and recently they are applied in cancer therapy.

Naturally occurring alkaloids are effective in cancer treatment but its mechanism of action has not been fully elucidated. Sanguinarine is reduced upon entering the cell and then undergo redox cycling between the reduced and oxidized forms causing the cell death by apoptosis [1]. The one-electron reduction or oxidation reactions of alkaloids are important for understanding the mechanism of generation radicals taking part in apoptosis.

The reactions of hydrated electron, carbon dioxide radical anion, hydrogen atom and $\text{Cl}_2^{\bullet-}$, N_3^{\bullet} , OH^{\bullet} radicals with coralyne and sanguinarine in aqueous solution have been studied by steady state and pulse radiolysis. The spectra of transient intermediates leading to the final products will be presented. The part of our presentation will be devoted to photoinduced electron transfer from excited triplet states to selected quenchers.

References:

[1] S.S. Matkar, L.A. Wrischnik, U. Hellmann-Blumberg, Archives of Biochemistry and Biophysics 2008, 477: 43-52

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