***Supplementary materials***

a b

c d

Figure S1. Absorption spectra of compounds **1-3** in 1% CrEL emulsion immediately after dissolution and after an indicated period of storage at 4 ºC. Solutions were stored at high concentration (compounds **1**, **2a**, **2b** at 2 mM and compound **3** at 0.2 mM) in 5% CrEL emulsion. Before the measurements, solutions were diluted to 25 µM in 1% CrEL emulsion.

a b

 c d

Figure S2. Irradiation-induced changes in the absorption spectra of solutions of compound **1** mixed with RNO and His (a, b) or with RNO (c, d). Spectral changes in the 380-500 nm region (a) report on the photoinduced generation of singlet oxygen, which, reacting with histidine, forms *trans*-annular peroxide intermediate capable of specifically bleaching RNO. Irradiation does not induce bleaching of compound **1** (b, d).

 a b

Figure S3. Irradiation-induced changes in the absorption spectra of the solution of compound **2a** mixed with RNO and His. Spectral changes in the 380-500 nm region (a) report on the photoinduced generation of singlet oxygen, which, reacting with histidine, forms *trans*-annular peroxide intermediate capable of specifically bleaching RNO. Irradiation does not induce bleaching of compound **2a** (b).

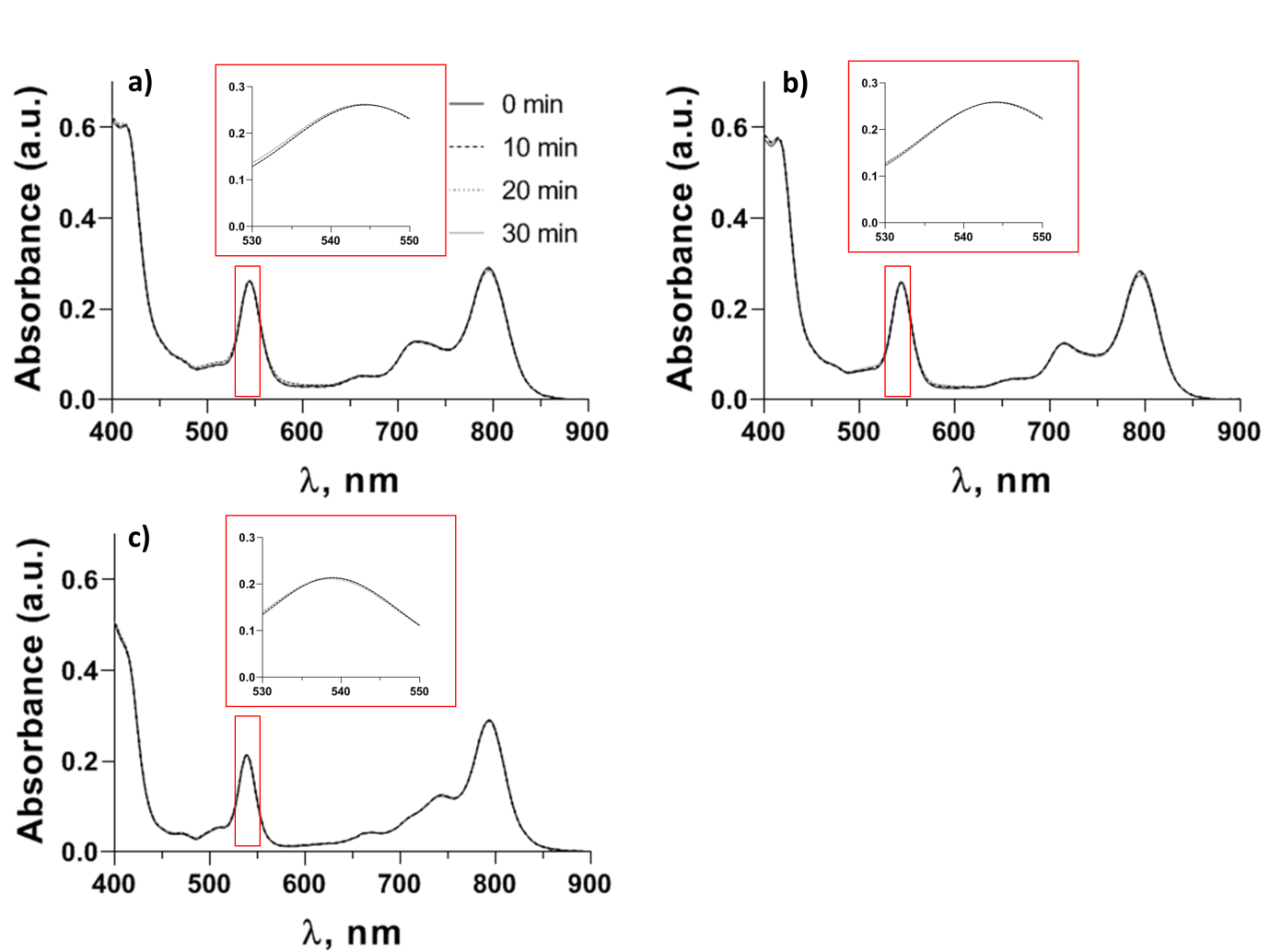


Figure S4 - The study of photoinduced superoxide anion radical formation by compounds **1** (a), **2b** (b) and **3** (c). Solutions of **1**, **2b** and **3** were irradiated with the 543 nm laser light for 30 min in the presence of NBT, the chemical trap of superoxide anion radicals. Absorption spectra were recorded every 10 min. The inserts demonstrate more precisely an absence of photoinduced changes in absorption in the 530-550 nm spectral range, i.e. the absence of both photoinduced formation of superoxide anion radical and photoinduced degradation of the photosensitizers.

The ability of **1**, **2b** and **3** to photoinduced formation of superoxide anion radicals was studied using nitroblue tetrazolium (NBT) as a chemical trap of these radicals: superoxide reduces NBT to a monoformazane that absorbs light in the region of 540 nm [1, 2]. Air-saturated solutions (phosphate buffered saline, pH 7.4) containing NBT (85 µM) and **1**, **2b** or **3** (10 µM, 1% CrEL) were irradiated with a He-Ne laser (532 nm, 1.2 mW/cm2) for 30 min at 34°C, and the absorption spectra was recorded every 10 min. During irradiation of solutions **1**, **2b** and **3** in 1% CrEL in the presence of NBT there was no change in the optical absorption of solutions at a wavelength of 540 nm (Fig. S2), indicating the absence of superoxide anion radical formation. No photoinduced degradation of photosensitizers was observed during these experiments.

a b

 **c** d

Fig. S5. Typical intracellular fluorescence emission spectra of compounds **1** (a), **2a** (b), **2b** (c) and **3** (d) (blue and red dotted lines) and corresponding fluorescence emission spectra of these compounds in 1% CrEL (black solid line). Typical intracellular fluorescence spectra of **2a** and **2b** in vesicular structures are shown by blue line; the spectra from the cytoplasmic regions with diffuse distribution of the compounds are shown by red line. Spectra are very similar in shape and maximum.

References to supplementary materials

1. Petyaev IM, Hunt JV. Micellar acceleration of oxygen-dependent reactions and its potential use in the study of human low density lipoprotein. Biochim Biophys Acta. 1997;1345(3):293-305. doi: 10.1016/s0005-2760(97)00005-2. PMID: 9150249.

2. Weng M., Zhang M.-H., Shen T. Electron transfer interaction between hypocrellin A and biological substrates and quantitative analysis of superoxide anion radicals. J. Chem. Soc., Perkin Trans., 1997, v. 2, p. 2393−2397.