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Vacata- and divacataporphyrin : new photosensitizers for application in photodynamic therapy - an in vitro study.

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Streszczenie

The photodynamic therapy is a well-known method of treatment of both malignant tumors and non-tumor lesions in human patients. In the present study, we aimed at evaluating the in vitro efficacy of the new photosensitizing agents, vacataporphyrin (VP), and divacataporphyrin (DVP).The effectiveness of VP and DVP was compared to well-known photosensitizers, that is, hematoporphyrin derivative (HPD) and chlorin e6 (Ce6) in identical in vitro conditions. The experiment was performed on a well-established breast cancer cell line, MCF-7 and compared to HCV 29T11-2-D1 cell line. Cells were incubated in standard conditions and they were exposed to different concentrations of VP, DVP, HPD, and Ce6, that is, 180, 90, 45, 22.5, and 10 μg/ml. After incubation with photosensitizers, the cells were washed, medium was exchanged and the cells were subjected to irradiation at the proper wavelengths, light intensity (100 mW/sq cm), and total light doses 4.5 and 9 J/sq cm.Our results showed that the VP and DVP are potent photosensitizers and the photocytotoxic effect after the incubation with DVP was much better than that of VP. The cytotoxic effects of VP and DVP were less intensive than these of HPD and Ce6. VP and DVP also accumulated well in the tumor cells. Our results also indicated that the VP and DVP effectiveness on MCF-7 cells was photosensitizer dose and light dose dependet. The overall properties revealed by both new porphyrins and particularly a possibility for excitation at a higher wavelength and thus a deeper tissue penetration, make them promising candidates for further in vivo experiments.

Słowa kluczowe

cell lines, divacataporphiryn, photosensitization, vacataporphyrin

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