Assessment of in vivo experiments : the newly synthesized porphyrin with proper light source enhanced effectiveness of PDT comparing to 5-ALA-mediated PDT.

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Background: The search for new photosensitizers for application in photodynamic therapy has quite a long history. In the past, a large number of potent photosensitizers were used in both basic and clinical studies; however, only a few turned out to be effective and safe.

Methods: In the present study, two compounds were used: 5-aminolevulinic acid in two formulations (free and liposomal), and the newly synthesized porphyrin, 5,10,15,20-tetra-p-tolyl-22,24-dithiadibenzocarbaporphyrin, termed DTDB. Two different light sources, a halogen lamp (wavelength 450+/−20 nm) and a diode laser (wavelength 450 nm), were used to sensitize the compounds. The entire experiment was performed on mice bearing mouse mammary carcinoma, 4T1.

Results:The results showed that the DTDB-PDT applied by means of a laser proved to be most effective and caused the 83.3% necrosis of treated tumors. The overall effect of laser PDT was more potent than that of the halogen lamp-mediated PDT.

Conclusions:In the present study, we would like to show that modifications of porphyrins lead to an increase in the effectiveness of PDT and that this effect could also be potentiated by using a proper light source.

Słowa kluczowe

5-Aminolevulinic acid, Liposomal-5-aminolevulinic acid, 5,10,15,20-Tetra-p-tolyl-22,24-dithiadibenzocarbaporphyrin, laser, Histopathology

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