**Background:** Tumor cells death induced by photodynamic therapy (PDT) drives to inflammation and antigen release and can activate specific anti-tumor immune response. In this work, we demonstrated the in vivo effect of vaccination with PDT-treated tumor cells.

**Methods:** PDT anti-tumor vaccines were obtained by continuous wave (CW) or pulse mode (PM) 662 nm laser irradiation (light dose: 4 J/cm², fluence rate: 50 mW/cm²) of mouse cervical cancer cells (RShM-5, 5x10⁵ cells) preliminarily treated with chlorine e6 based photosensitizer Radachlorin (PS, concentration: 7 mg/ml, 10 mg/ml). Cell viability were assessed using Annexin V-FITC/PI assay and analyzed by flow cytometry. After 24 h PM-treated RShM-5 cells (1.25x10⁵ cells) were harvested and subcutaneous injected into right flank of CBA mice. 8 days after vaccination mice were subcutaneous injected with 5x10⁵ live RShM-5 cells in another flank. The size of the initiated tumor node in the challenge site was monitored up to 70 days after the inoculation. The survival rate was assessed in the control group (CG n=10), CW PDT group (CWG, n=9), PM PDT group (PMG, n=9) and freeze-thaw cell lysis group (FTG, n=9). Mice were sacrificed when the tumor volume exceeded 4 cm³.

**Results:** On the 70th day after inoculation with live RShM-5 cells, the tumor-free survival probability was 67 % in PMG, 33 % in CWG, 22 % in FTG and 0 % in CG. At light dose 4 J/cm² and PS concentration 7 mg/ml number of dying but not dead PM PDT-treated RShM-5 cells was much more then in case of light dose 8 J/cm² and PS concentration 10 mg/ml. These PDT-treated RShM-5 cells induced better tumor-free survival probability.

**Conclusions:** Vaccination with PM PDT-treated RShM-5 cells resulted in the best anti-tumor effect in vivo. PM PDT-treated tumor cells have greater immunogenic potential. Very likely that for the best immunogenic effect of PDT-generated vaccines they must contain predominant amount of dying but not dead tumor cells.

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