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Influence of non-irradiated and UVA-irradiated l-arginine diprotoporphyrinate alone and in combination with 5-methoxypsoralen, on respiratory burst of human neutrophils *in vitro*.

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The study was focused on the influence of L-arginine diprotoporphyrinate (PP(Arg)2), a new generation photodynamic therapy sensitizer, on respiratory burst of human neutrophils stimulated with phorbol 12-myristate 13-acetate (PMA) and opsonized zymosan (OZ). In 0.5 μM concentration, non-irradiated and UVA-preirradiated PP(Arg)2 did not show any significant effect on luminol-enhanced chemiluminescence of non-stimulated and PMA-stimulated human neutrophils in vitro, except for a weak antioxidative effect of non-irradiated PP(Arg)2 towards non-stimulated cells. Nonirradiated PP(Arg)2 in 0.5 μM concentration significantly decreased chemiluminescence of OZ-stimulated neutrophils; in presence of UVA-irradiated sensitizer, this effect was more pronounced. 0.5 μM PP(Arg)2 in combination with 105 $\mu g \times l^{-1}$ 5-MOP revealed a prooxidative effect towards non-stimulated neutrophils, an antioxidative effect towards OZ-stimulated neutrophils and towards cells stimulated with PMA did not change the luminol-enhanced chemiluminescence. Possible mechanisms of the observed phenomena were also discussed. The obtained results suggest that PP(Arg)2 inhibits EGF-receptor tyrosine kinase whose activity plays an important role in mechanism of respiratory burst stimulation by OZ, differently to analogical stimulatory effect of PMA predominantly connected with release of kinase C. The enhancement of inhibitory effect of PP(Arg)2 after its UVA-preirradiation may be due interaction of excited molecules of senstitzer with superoxide radical anions; the eventual action of irradiation photoproducts could not be also excluded. A synergistic antioxidative effect of PP(Arg)2 and 5-MOP towards OZ-stimulated neutrophils may be a result of addition of porphyrin phototoxic effect and light-dependent antioxidative action of psoralen derivative.