Nanomedicine from Physical Point of View.
Nonfunctionalized nanoparticles in antiviral therapy

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The antiviral activity of ´pure´ non-functionalized nanoparticles can be caused by near-field effects. Namely, due to local-field enhancement effect caused by near-field interaction between the nanoparticle/s and virus, the domains of strong local field (hot spots) are formed on the viral envelope. Then, the strong gradients of local-field are formed at the viral envelope. The gradients cause the ponderomotive forces acting to the spikes and whole viral envelope. As a result, the molecules-receptors at the spikes are deformed and deformed the envelope up to its destroying. The proposed mechanism of antiviral activity of non-functionalized nanoparticles does not strongly depend on the material from which the nanoparticle is made. Antiviral activity significantly depends on the size and shape of the particles and is manifested against of different viruses. The results of various experiments performed by the scientific group of author and other scientific groups can be explained in the frame of the proposed mechanism.

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or online

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