

The effect of sound waves on Fe₂O₃ nanoparticles permeability of cancer cells

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Abstract

The drugs that usually are applied as anticancer are toxins. These toxins are inorganic or organic molecules which harm normal cells as much as cancer cells. Recently, researchers are trying to find ways to develop targeted drugs (molecules) which kill cancer cells exclusively. Different methods have been developed for killing cancer cells .e.g. heating the toxic drugs by electromagnetic field or activate the drug locally by sound or heat waves. These methods are non- invasive. In this research, two physical techniques were used to kill cancer cells, 528 Hz sound waves and Fe₂O₃ nanoparticles magnetic field. Nanoparticles were synthesized and cells were cultured. The viability of cells was conducted by MTT test. It was evident that the nanoparticles interacting with the cells membrane and the magnetic field applied on the sample changed the membrane structure. Considering the possibility of frequency and intensity change sound wave is more applicable in short time.

Keywords: Sound .528 HZ, Fe₂O₃ nanoparticles, Cancer cell, MTT method.

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