FT-IR analysis of pathogen inactivation by middle IR femtosecond laser pulses

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IR radiation have antibacterial effect against various spices of bacteria, spores and fungi's and is used for sterilization and pasteurization of food products. The IR radiation with a wavelength of 3 and 6 micrometers are the most effective for pathogen inactivation. These wavelengths corresponding to vibrations frequencies of C-H bond (3 mkm) and C=O, N-H bond of amide groups of proteins (6 mkm). In this study we investigate molecular changes caused by effect of femtosecond IR laser pulses with wavelength of 3 and 6 mkm to *P.aeruginosa* bacteria by the stationary Fourier-transform IR spectroscopy, with the spectral peaks parameters being obtained by Lorentzian fitting with the hidden peaks revealed by the second derivative calculations. The results of analysis show changes in the characteristic band associated with proteins, lipids and fatty acids of bacteria.