FTIR Microscopy As Analytical Method For The Evaluation Of Anti-Bacterial Agents Activity.

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In this study the potential of FTIR microspectroscopy for early evaluation of anti-bacterial therapy efficiency was examined. For this purpose, the effect of caffeic acid phenethyl ester (CAPE) and ampicilin on the development of bacterial infection in cell culture was examined. CAPE is one of the most active components of propolis which is a natural honeybee product with a potent anti-bacterial activity. Our results show early and significant spectral indicators for successful treatment with CAPE. Treatment of gram (-) bacteria with CAPE causes only partial inhibition of the bacterial infection development, whereas, it completely inhibits gram (+) bacteria infection development. As early as 2 h post treatment with CAPE unique spectral biomarkers significantly appeared both in gram (-) and (+) bacterial infections although some of these biomarkers showed different trends in gram (-) compared to gram (+). For instance, the intensity of peaks at 682 and 1316 cm⁻¹ decreases in all examined gram (-) bacterial strains while significantly increases in all examined gram (+) bacterial strains.