

IDENTIFICATION OF MOLECULAR PEAKS OF GALLBLADDER STONE BY MEANS OF PHOTOACOUSTIC SPECTROSCOPY^a

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A novel photoacoustic spectrophotometer (PAS) for study the UV-visible absorption spectrum of gallbladder stone is described. Photoacoustic spectroscopy detects sound waves induced by absorption and periodic heating of a thin layer of gas above a sample placed in a PA cell. This heat results from non-radiative transitions following periodic illumination of the sample. Thus, in the present paper molecular composition of gallbladder stone has been investigated by means of PAS as it does not require any sample preparation. The PA spectrum of gallbladder stone is compared with the UV–Visible absorption spectrum of same gallbladder stone. The presence of cholesterol, calcium carbonate, bile acid and bilirubin in the photoacoustic spectrum, have been directly recognized. The results of this investigation demonstrate that PAS is more suitable to identify the chemical compounds present in gallbladder stones than the conventional absorption spectroscopy.

^aThe author thankful to UGC (MANF) for providing financial assistance .