ANALYSIS OF URINARY CALCULI USING INFRARED SPECTROSCOPIC IMAGING

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Kidney stone disease is a cosmopolitan disease, occurring in both industrialized and developing countries and mainly affecting adults aged 2060 years. The formation of kidney stones is a process that includes many factors. Its primary and contributing pathogenic factors are genetic, nutritional and environmental, but also include personal habits. Information about the chemical structure of kidney stones is of great importance to the treatment of the kidney diseases. The usefulness of such information was first recognized in early 1950s. Analysis of urinary stones by various chemical methods, polarization microscopy, x-ray diffraction, porosity determination, solid phase NMR, and thermo analytical procedures have been widely used. Unfortunately, no one method is sufficient to provide all the clinically useful information about the structure and composition of the stones. Infrared spectroscopy can be considered a relatively new method of kidney stone analysis. It allows to identify any organic or inorganic molecules the constituents of kidney stones. So far this method had never been used to collect information about kidney stone component patterns in Lithuania. Since no epidemiological studies have been performed in this field, the medical treatment of kidney stone disease is empirical and often ineffective in hospitals around the country. The aim of this paper is to present some results of analysis of kidney stones extracted from local patients using FTIR spectroscopical microscopy.