

# **<sup>31</sup>P HIGH RESOLUTION NMR SPECTROSCOPY IN ANALYSIS OF PHOSPHATE-CONTAINING COMPOUNDS OF BILE**

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## **Abstract**

<sup>31</sup>P high resolution nuclear magnetic resonance (NMR) spectroscopy was used to examine phospholipid metabolism and to analyze the phosphate-containing compounds in the bile in the transplanted liver recipients, the cholelithiasis patients' and the living donors' groups. Three signals of NMR spectrum of raw bile were determined: inorganic phosphate (Pi), lysophosphatidylcholine (LPtdC), and phosphatidylcholine (PtdC) in all investigated groups. Pi concentration was significantly higher in the recipients' group than in the living donors' group (Mann-Whitney test,  $p < 0.05$ ). LPtdC and PtdC concentrations were significantly higher (Mann-Whitney test,  $p < 0.05$ ) in the cholelithiasis patients' group in comparison to the recipients' group. Between the cholelithiasis patients' group and the living donors' group no significant differences in the three analysed compounds were found. The chemometric analysis for the <sup>31</sup>P NMR spectral data set provided good classifications between the living donors' and recipients' groups and the poor one among all groups. Results of our study suggest that <sup>31</sup>P NMR spectroscopy *in vitro* may be used for assessment of graft function, for the early signs of rejection and for the predisposition to gallstone formation.

**Keywords:** phospholipids, orthotopic liver transplantation, metabolomics