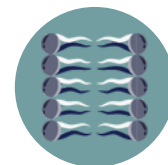


1ST LIPIDOMICS SPECIAL INTEREST GROUP MEETING



POSTER ABSTRACT

EFFECT OF EXOGENOUS NEBULISER SURFACTANT TREATMENT ON PLASMA PHOSPHATIDYLCHOLINE SYNTHESIS IN MECHANICALLY VENTILATED COVID-19 PATIENTS

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COVID-19 is associated with significant morbidity and mortality in the intensive care unit. Exogenous surfactant primarily consists of phosphatidylcholines (PC) and may be effective in improving outcomes. Plasma PC, the major circulating phospholipid is synthesised by two biologically different pathways: Cytidine Diphosphate (CDP)-Choline and Phosphatidylethanolamine N-methyltransferase (PEMT) pathways. Plasma PC synthetic pathways in patients undergoing surfactant treatment have not been well understood. To study the effect of exogenous porcine surfactant replacement on plasma PC composition, synthesis and metabolism, twenty mechanically ventilated COVID-19 patients, randomised at 3:2 fashion were assigned to receive surfactant treatment and no treatment. Both patient groups were infused with 3mg/kg of methyl-D9-choline chloride for 3 hours and bloods were collected at 0, 8, 16, 24, 48 and 72 hours. Stable isotope labelling with methyl-D9-Choline chloride combined with neutral loss and precursor scan modes on ESI-MS/MS were used to assess the composition and molecular specificity of PC synthesis via the PEMT and CDP-choline pathway.

The analysis showed plasma PC composition primarily consisting of PC16:0/18:2, PC16:0/18:1, PC16:0/20:4 and PC18:0/18:2 in both surfactant and control patient groups, with no significant differences in plasma PC compositions between both groups. Surfactant treated group showed a decrease in methyl-D6-PC and methyl-D3-PC incorporation, possibly indicating decreased PC synthesis via the PEMT pathway, however this was not significant. The methyl-D9-PC incorporation was similar for both groups, with surfactant treated group showing a slightly earlier methyl-D9-PC incorporation and degradation, indicating a faster flux through the CDP-choline pathway. Stable isotope labelling studies of PC enrichment indicate that, although slight variations in PC synthesis were observed, these changes were not statistically significant. This suggests that exogenous surfactant administration does not markedly affect endogenous PC synthesis in plasma.