

# Magnetic resonance spectroscopy to unravel metabolic alterations in hepatic steatosis in humans

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## PROPOSITIONS

Belonging to the PhD thesis

### **Magnetic resonance spectroscopy to unravel metabolic alterations in hepatic steatosis in humans**

*(Pandichelvam Veeraiah)*

1. The absolute estimation of intrahepatic lipid (IHL) content requires accurate  $T_2$  correction of the water and lipid MR signals based on the level of steatosis and type of MRS sequence used - *This thesis*.
2. The possibility to determine specifically the saturated fatty acid fraction is important as it may hamper hepatic insulin sensitivity - *This thesis*.
3. Next to the alterations in total IHL and composition, low hepatic choline status is one of the metabolic abnormalities associated with hepatic steatosis in obese volunteers - *This thesis*.
4. Innovation in MRS sequences for indirect  $^{13}\text{C}$ -MRS is instrumental to investigate the various determinants of lipid partitioning into the human liver - *This thesis*.
5. Pharmaceutical and food industries can benefit from the development of MRS protocols towards targeting metabolic pathways in the liver for treatment of hepatic steatosis - *Impact of this thesis*.
6. The composition of hepatic fat reveals new mechanistic insights about its origin and pathways leading to fat accumulation in the liver - *Luukkonen P.K. et al. Diabetes Care 2018*.
7.  $T_2$  correction for composite lipid signals can be problematic by assuming a constant monoexponential  $T_2$  decay for all lipid peaks as some of the lipid resonances show j-evolution - *Hamilton G. et al. J Magn Reson Imaging 2009*.
8. Localized indirect  $^{13}\text{C}$ -MRS is very promising for the longitudinal assessment of *in vivo* lipid partitioning between multiple tissues in rats - *Jonkers R.A.M. et al. Magn Reson Med 2012*.
9. Everybody is a genius. But if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid - *Prof. Albert Einstein*.
10. You have to dream before your dreams can come true - *Dr. A.P.J. Abdul Kalam*.