

題名:Comparison of Two Different Resonance Frequency Analysis  
Methods in vivo

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上傳時間:2009-11-23

摘要:In vivo  $^1\text{H}$  NMR spectra of small volumes-of-interest (VOI) were localized in human soleus muscle (8 ml) and compared with volume selective spectra of subcutaneous fat tissue and femoral yellow bone marrow (2 ml). All examinations were performed by the double spin echo (PRESS) localization technique. To provide comparability, spectra of different tissues were recorded using identical sequence timing. Clearly improved resolution of the lipid signals of muscle tissue was obtained using long echo times  $TE > 200$  ms. The spectra of muscle tissue exhibit lipid signals that stem from two compartments with a difference of their resonance frequencies of about 0.2 ppm (Larmor frequency difference 12-13 Hz at 1.5 T). The existence of two fatty acid compartments is supported by measurements of the relaxation times and line shape analysis. Both compartments contain fatty acids or triglycerides with similar composition. Probably one compartment corresponds to fat cells within muscle tissue, the other compartment with lower Larmor frequency is located within muscle cells.