

Publication

Analysis of glycogen storage disease by in vivo ^{13}C NMR : comparison of normal volunteers with a patient**JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 153049**Author(s)** Beckmann, N.; Seelig, J.; Wick, H.**Author(s) at UniBasel** [Seelig, Joachim](#) ;**Year** 1990**Title** Analysis of glycogen storage disease by in vivo ^{13}C NMR : comparison of normal volunteers with a patient**Journal** Magnetic Resonance in Medicine**Volume** 16**Number** 1**Pages / Article-Number** 150-60**Keywords** Abdominal Muscles/chemistry; Adipose Tissue/chemistry; Adult; Carbon; Dietary Carbohydrates/pharmacology; Dietary Proteins/pharmacology; Glycogen/*analysis; Glycogen Storage Disease Type III/*metabolism; Head; Humans; Leg; Liver/chemistry; Magnetic Resonance Spectroscopy/*diagnostic use/methods; Male; Muscles/*chemistry

Broadband proton-decoupled natural abundance ^{13}C spectra of the human calf, liver, and head were obtained from normal volunteers and a patient with glycogen type IIIA storage disease. Two concentric and coplanar surface coils of diameters 8.0 cm and 13.0 cm were used for ^{13}C (at 16.0 MHz) and ^1H (at 63.6 MHz), respectively. A WALTZ-8 sequence lead to homogeneous decoupling over a large volume. In addition to lipid resonances a variety of other metabolite resonances could be resolved. The glycogen concentration in the muscle and the liver of normal volunteers varied considerably depending on dietary preparation and physical exercise. The glycogen level in the liver and the calf of a patient with glycogen type IIIA storage disease was increased by a factor of 2-3 compared to normal, well-trained volunteers. Proton-decoupled ^{13}C spectra of human head are reported for the first time. The spectra are dominated by lipid resonances but an additional resonance at 54.0 ppm is clearly visible. The proton-decoupled ^{13}C head spectrum of a patient with glycogen type IIIA storage disease revealed additional resonances between 71.0 and 85.0 ppm.

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