

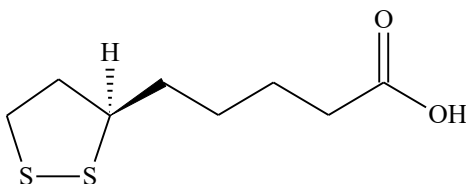


Test Report

Sample name: Pure alpha-Lipoic acid
Client: Hansen Sp. z o.o., ul. Zaborowska 8, 05-083 Zaborów, Poland
Purpose of test: Verification of delivered product
Sample description: "Pure alpha-Lipoic acid"
Brand name: Hansen Supplements

Description of substance:

Sample size: 10g
Property: pale-yellow powder
Formula: C₈H₁₄O₂S₂
FW: 206.32556
CAS number: 1200-22-2
Structure:



Batch No.: 020011231102
Date received: 20.06.2024
Test items: Identification of substance, purity, heavy metals
Summary: The sample has been identified and found to be of high quality
Measured purity: **Above 98%** according to ¹H NMR analysis. Appropriate spectra are shown in (Fig. 2a and 2b).

Authentication method: Standard in database (https://hmdb.ca/spectra/nmr_one_d/1710) and literature (Kowalik, Patrycja, Piotr Bujak, Mateusz Penkala, and Adam Pron. "Organic-to-Aqueous Phase Transfer of Alloyed AgInS₂-ZnS Nanocrystals using simple hydrophilic ligands: Comparison of 11-mercaptoundecanoic acid, dihydrolipoic acid and cysteine." *Nanomaterials* 11, no. 4 (2021): 843.) of ¹H and ¹³C shifts.

All values are within the relevant standards



Test results:

Purity:

Heavy metals: n.d.

Pb (Lead): n.d.

Hg (Mercury): n.d.

Cd (Cadmium): n.d.

As (Arsen): n.d.

Comments:

n.d. – not detected, below limit of detection on AAS spectr AA240FS + AA240Z + GTA120

Date: 29.06.2024

Tested by: Antoni Szumny

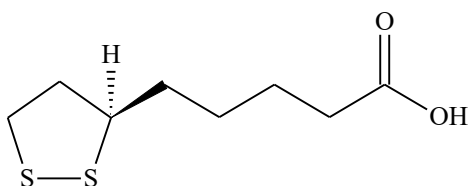


Figure 1. Chemical structure of pure enantiomer of α -lipoic acid

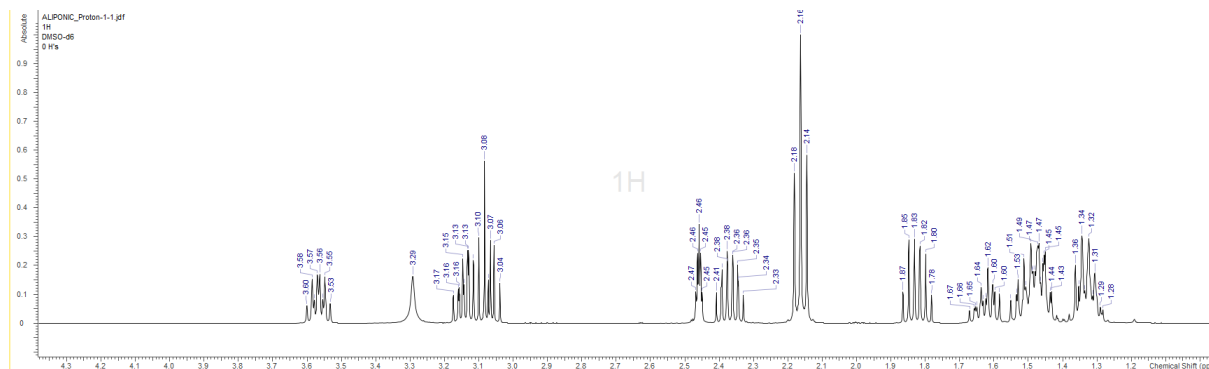


Figure 2. ¹H spectrum of lipoic acid, batch 020011231102 (in CDCl₃);

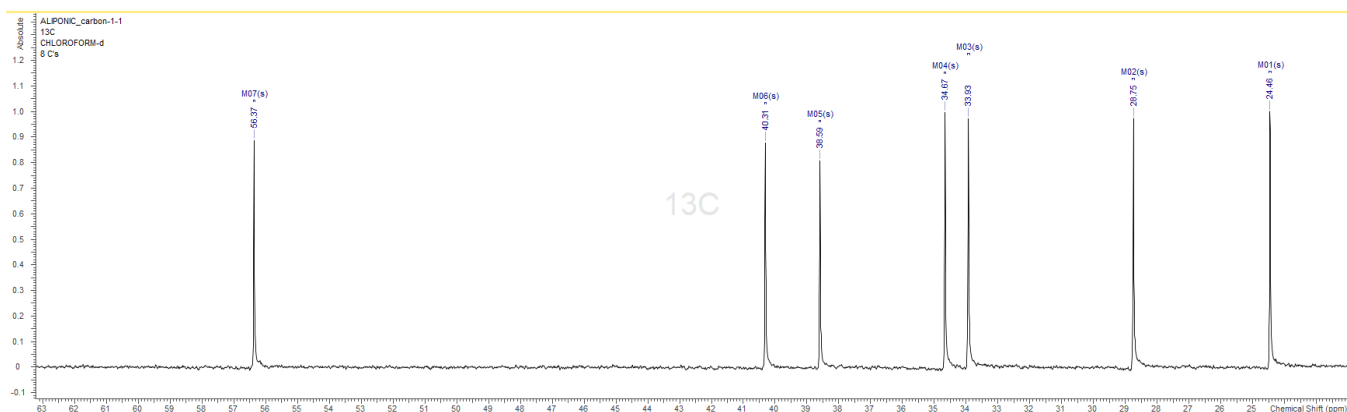
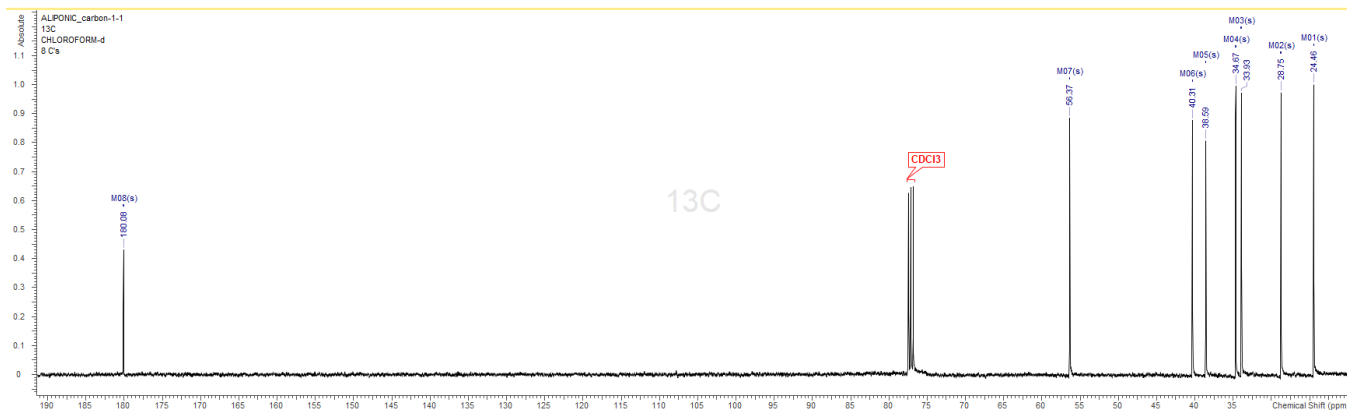


Figure 2b. ^{13}C spectrum of α -Lipoic acid, batch 020011231102 (in CDCl_3);

29.06.2024

Antoni Szumny

