**SUPPLEMENTARY DATA**

**Comparison of the Lipoamide Synthesis by Direct Amidation and via Amidation of Fatty Acid Methyl Esters**

1. **TLC Profile of Synthesis of Lipoamides**

**Table 1.** TLC profile during synthesis of lipoamides stearate-p-anisidine and lipoamide stearate-p-nitroaniline every 6 hours for 18 hours

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reaction time (h) | Lipoamide stearate-p-anisidine | | Lipoamide stearate-p-nitroaniline | |
| Direct amidation | FAME | Direct amidation | FAME |
| 6 |  |  |  |  |
| 12 |  |  |  |  |
| 18 | - | - |  |  |

*SM = starting material, X = reaction mixture, LA = lipoamide*

**Table 2.** TLC profile during synthesis of lipoamides oleate-p-anisidine and lipoamide oleate-p-nitroaniline every 6 hours for 18 hours

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reaction time (h) | Lipoamide oleate-p-anisidine | | Lipoamide oleate-p-nitroaniline | |
| Direct amidation | FAME | Direct amidation | FAME |
| 6 |  |  |  |  |
| 12 |  |  |  |  |
| 18 | - | - |  |  |

*SM = starting material, X = reaction mixture, LA = lipoamide*

A green rectangular object with black lines

Description automatically generated with medium confidence

**Figure 1.** TLC examination on lipoamides stearate obtained from direct amidation and via amidation of FAME using several eluent systems: toluene-ethyl acetate 95:5 (a), hexane-ethyl acetate  95:5 (b),  chloroform-methanol  95:5 (c). (X =  lipoamides obtained from direct amidation and Y = lipoamides obtained via amidation of FAME)

A group of green rectangular objects

Description automatically generated

**Figure 2.** TLC examination on lipoamides oleate obtained from direct amidation and via amidation of FAME using several eluent systems: toluene-ethyl acetate 95:5 (a), hexane-ethyl acetate  95:5 (b),  chloroform-methanol  95:5 (c). (X =  lipoamides obtained from direct amidation and Y = lipoamides obtained via amidation of FAME)

1. **FTIR Spectra**

A graph of different types of substances

Description automatically generated with medium confidence

**Figure 3.** FTIR spectra of lipoamide stearate-aniline (a) and lipoamide oleate-aniline (b) compared to fatty acid.

A graph of a certain substance

Description automatically generated with medium confidence

**Figure 4.** FTIR spectra of lipoamide stearate-cyclohexylamine (a) and lipoamide oleate-cyclohexylamine (b) compared to fatty acid.

A graph of a person's reaction

Description automatically generated with medium confidence

**Figure 5.** FTIR spectra of lipoamide stearate-p-anisidine (a) and lipoamide oleate-p-anisidine (b) compared to fatty acid.

A graph of a graph of a person

Description automatically generated with medium confidence

**Figure 6.** FTIR spectra of lipoamide stearate-p-nitroaniline (a) and lipoamide oleate-p-nitroaniline (b) compared to fatty acid.

A screenshot of a graph

Description automatically generated

**Figure 7.** FTIR spectra of lipoamide stearate-aniline (a) and lipoamide oleate-aniline (b) compared to fatty acid methyl ester.

A graph of a graph of a person

Description automatically generated with medium confidence

**Figure 8.** FTIR spectra of lipoamide stearate-cyclohexylamine (a) and lipoamide oleate-cyclohexylamine (b) compared to fatty acid methyl ester.

*A graph of a person's body

Description automatically generated with medium confidence*

**Figure 9.** FTIR spectra of lipoamide stearate-p-anisidine (a) and lipoamide oleate-p-anisidine (b) compared to fatty acid methyl ester.

*A screenshot of a graph

Description automatically generated*

**Figure 10.** FTIR spectra of lipoamide stearate-p-nitroaniline (a) and lipoamide oleate-p-nitroaniline (b) compared to fatty acid methyl ester.