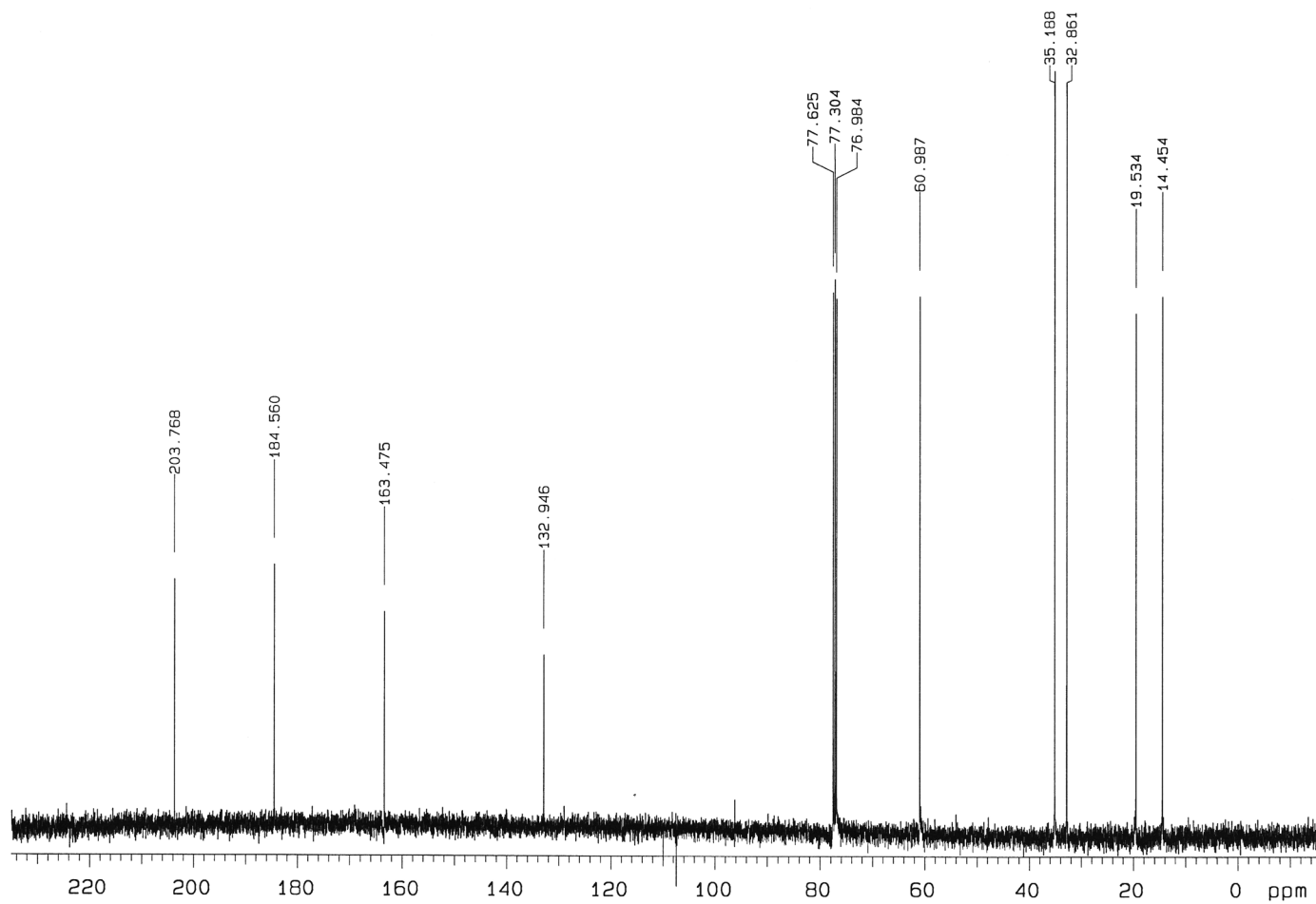


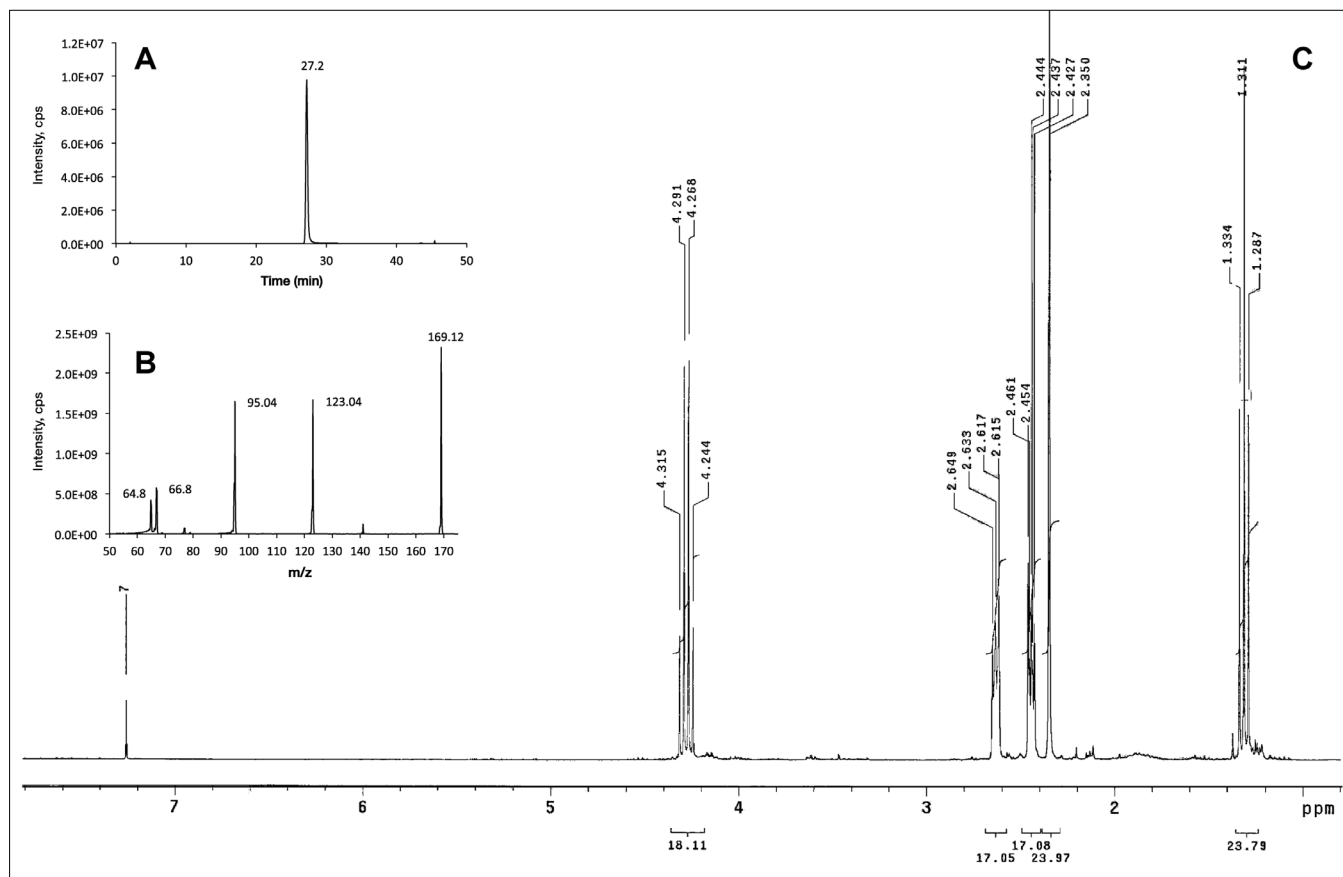
**SUPPORTING INFORMATION - [TABLE]**

**Table S1. Exact mass assays of CoA esters derived from levulinate in perfused rat livers.** The assays were conducted on extracts from 3 livers perfused with unlabeled (M) LEV, [<sup>13</sup>C<sub>5</sub>]LEV (M5), or unlabeled (M) LEV + [ε-<sup>15</sup>N]lysine. The listed compounds assayed are shown in Scheme 1. Compound **4/5** is probably a mixture of tautomers eluting in one peak.

Metabolites	Substrates	Measured (m/z)	Theoretical (m/z)	Difference (ppm)
<b>1</b>	M LEV	866.1593	866.1598	0.6
	M5 LEV	871.1758	871.1766	0.9
	M LEV+ [ε- <sup>15</sup> N]lysine	866.1593	866.1598	0.6
<b>2</b>	M LEV	908.1708	908.1704	0.4
	M5 LEV	913.1875	913.1872	0.3
	M LEV+[ε- <sup>15</sup> N]lysine	908.1708	908.1704	0.4
<b>8</b>	M LEV	910.1859	910.1860	0.1
	M5 LEV	915.2023	915.2028	0.5
	M LEV+[ε- <sup>15</sup> N]lysine	910.1859	910.1860	0.1
<b>4/5</b>	M LEV	890.1605	890.1598	0.8
	M5 LEV	895.1771	895.1766	0.6
	M LEV+[ε- <sup>15</sup> N]lysine	890.1605	890.1598	0.8
<b>6</b>	M LEV	889.1752	889.1758	0.7
	M5 LEV	894.1938	894.1926	1.3
	M LEV+[ε- <sup>15</sup> N]lysine	890.1722	890.1728	0.7

**SUPPORTING INFORMATION - [FIGURES]**

**Figure S1.** <sup>13</sup>C-NMR spectrum of synthesized 3,6-diketoheptanoate ethyl ester **2**. (See Experimental Procedures)



**Figure S2.**  $^1\text{H-NMR}$  and LC/MS spectra of synthesized 2-methyl-5-oxocyclopent-1-enecarboxylic acid ethyl ester **4**.

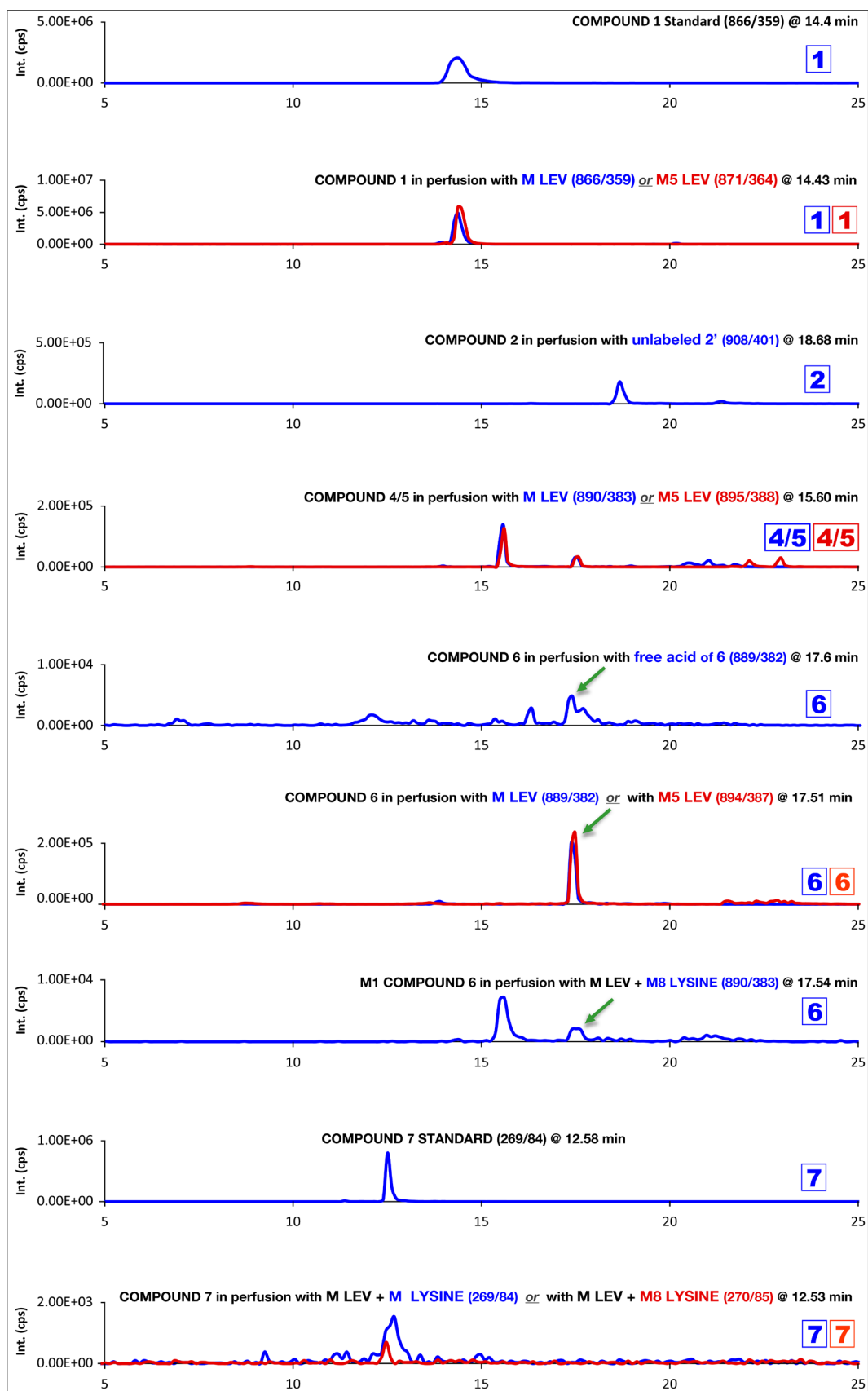
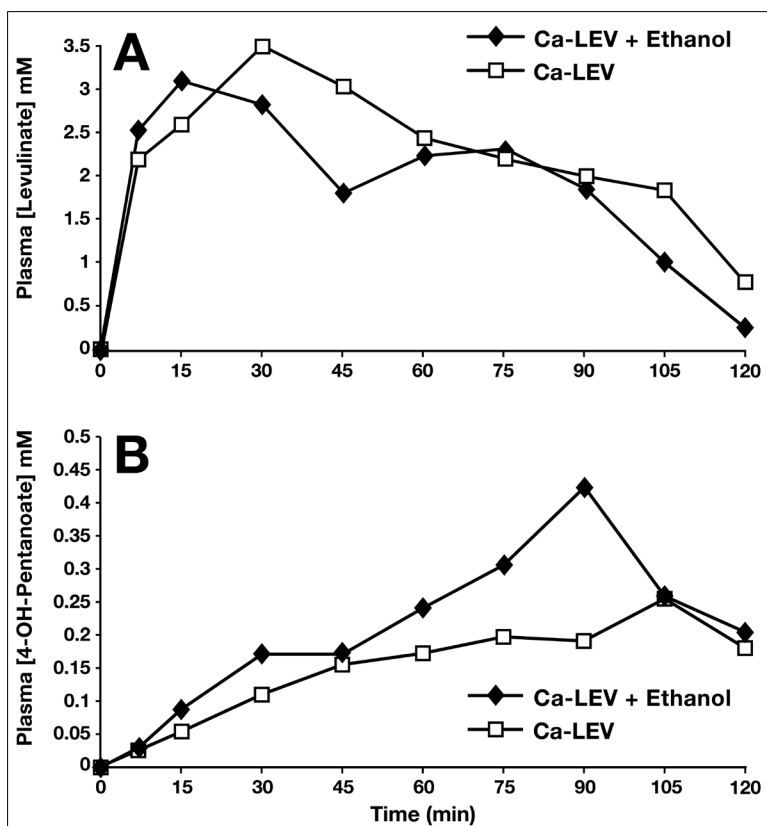


Figure S3. LC/MS data of **1**, **2**, **4/5**, **6**, **7** (Scheme 1, left panel).



**Figure S4.** Plasma concentrations of levulinate (A) and 4-hydroxypentanoate (B) in rats injected with levulinate  $\pm$  ethanol.

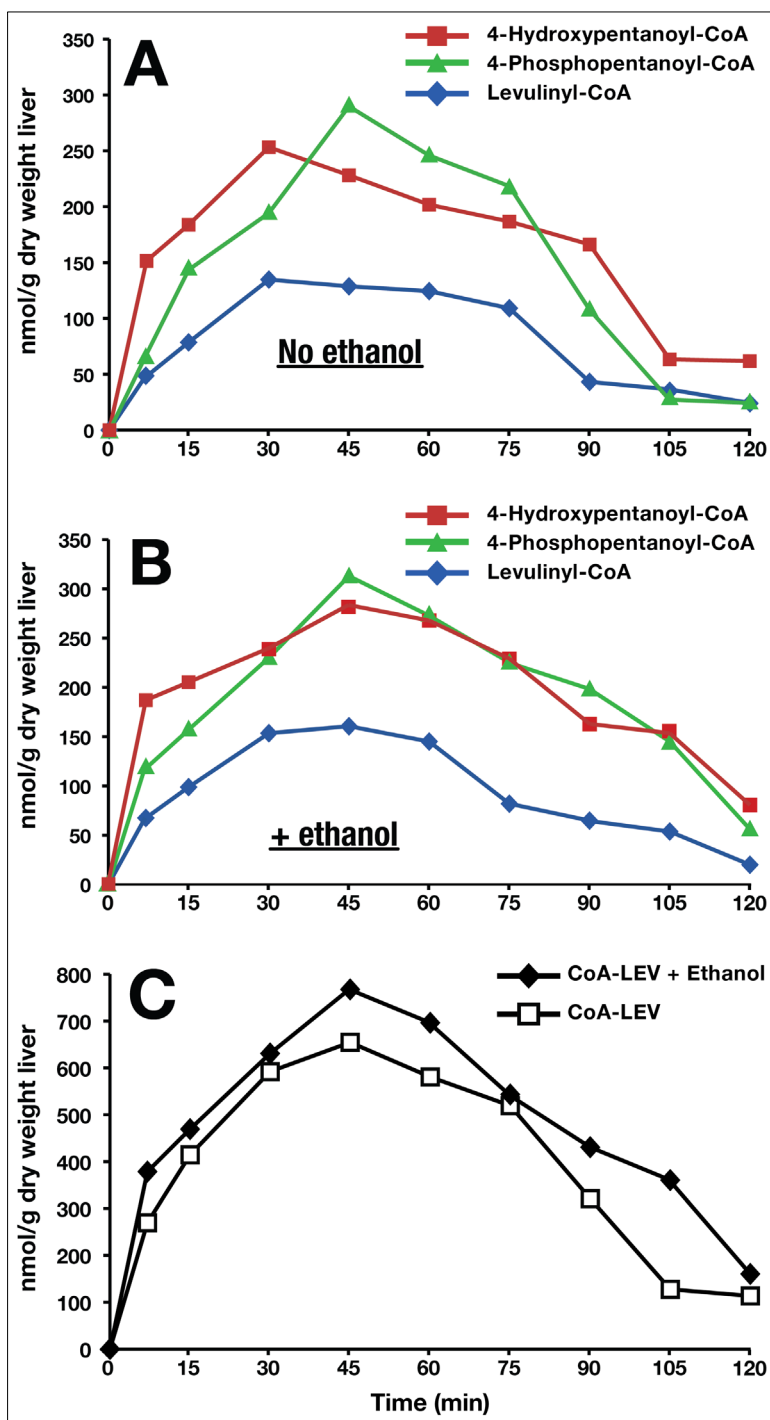


Figure S5. Liver concentrations of the main C<sub>5</sub> acyl-CoAs derived from levulinate in rats gavaged with calcium levulinate ± ethanol.

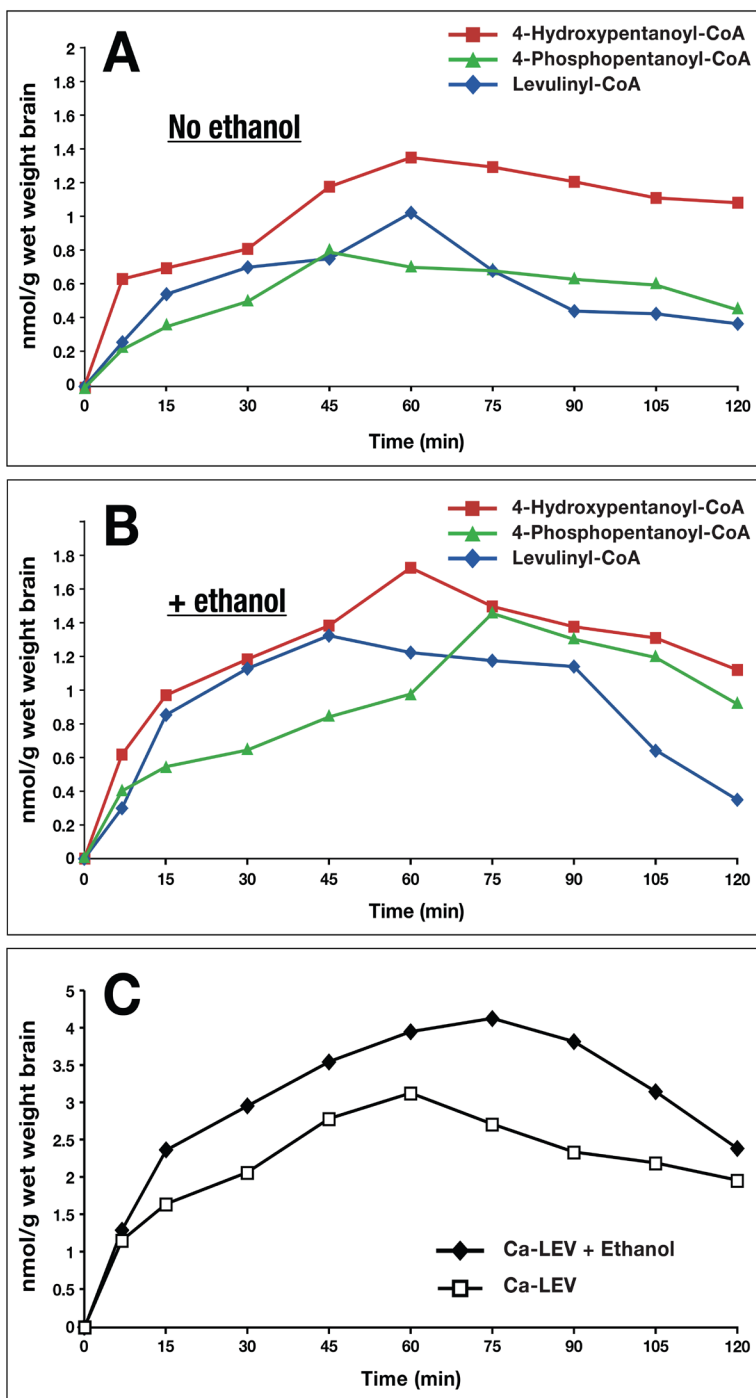


Figure S6. Brain concentrations of the main C<sub>5</sub> CoA esters derived from levulinate in rats gavaged with calcium levulinate ± ethanol.