

Real Time Molecular Imaging of TCA Cycle Metabolism *In Vivo* By Hyperpolarized 1-¹³C Diethyl Succinate

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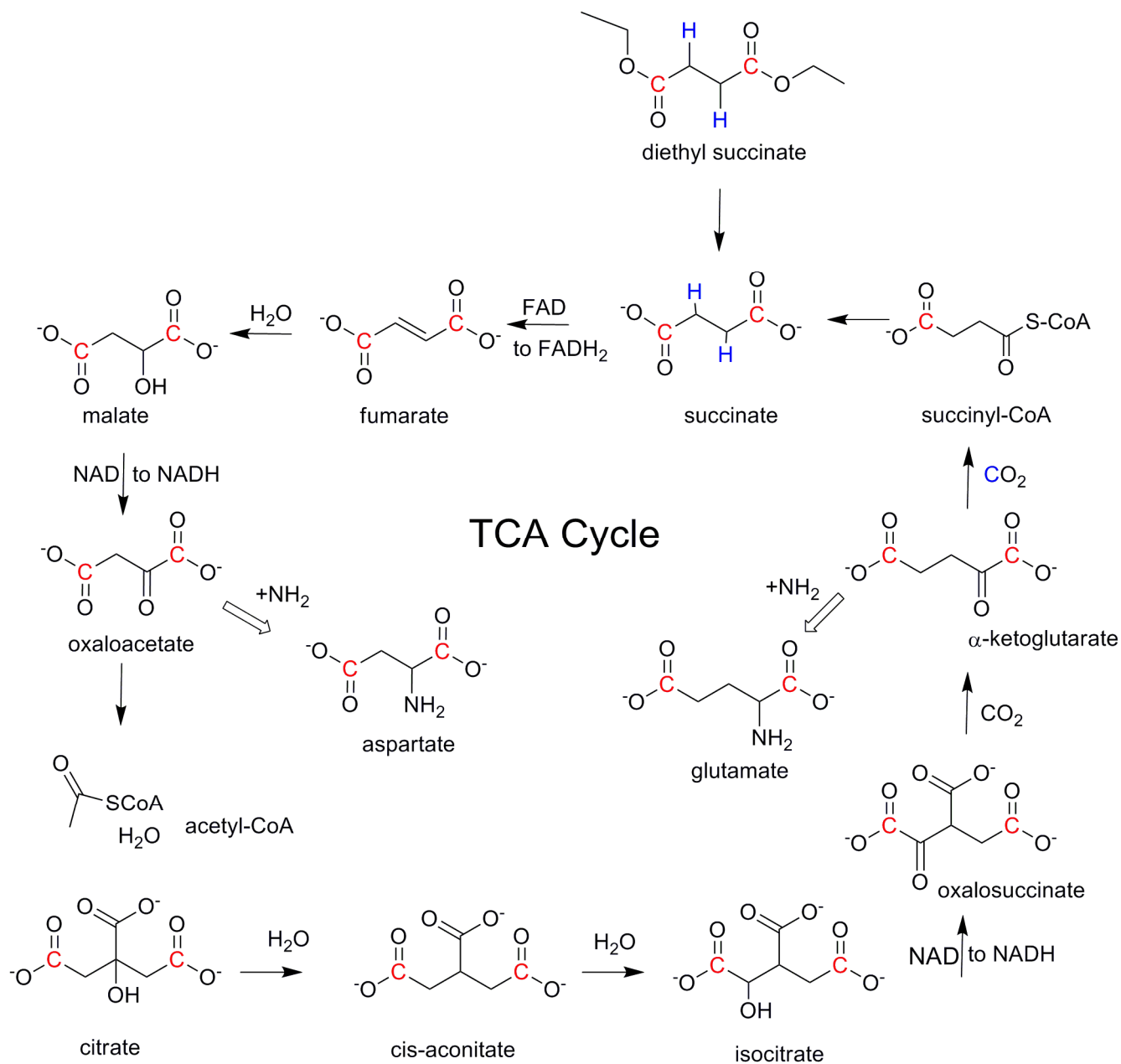
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| Mouse # | Injection type | Succinate | Malate | Fumarate | Aspartate | Conc. Diethyl succinate |
|---------|----------------------------|-----------|--------|----------|-----------|-------------------------|
| 1 | i.v. | X | X | X | X | 24 mM |
| 2 | i.v. | X | X | | | 24 mM |
| 3 | i.v. | X | X | | X | 20 mM |
| 4 | i.v. | X | X | X | X | 20 mM |
| 5 | i.v. | X | X | X | X | 20 mM |
| 6 | i.v. | X | X | | X | 20 mM |
| 7 | i.v. | X | X | | X | 20 mM |
| 8* | i.p. (1 st inj) | | X | X | X | 20 mM |
| | i.p. (2 nd inj) | X | X | X | X | 20 mM |
| 9* | i.v. (1 st inj) | X | X | X | X | 20 mM |
| | i.p. (2 nd inj) | | X | X | | 20 mM |
| 10* | i.v. (1 st inj) | X | X | X | X | 20 mM |
| | i.p. (2 nd inj) | X | X | X | X | 20 mM |
| 12 | i.v. | X | X | X | X | 20 mM |
| 13 | i.v. | X | X | X | X | 20 mM |
| 14 | i.v. | X | X | X | X | 20 mM |

Supplement Table 1: Table of Metabolites seen in first injection of hyperpolarized diethyl succinate.

Because we only performed four i.p. injections, the *asterisks experiments are included in the table.



Supplement Figure 1: A diagram representing TCA cycle metabolites arising from hyperpolarized $1\text{-}^{13}\text{C}$ succinate. Any of the red carbons of the metabolites could be in the hyperpolarized state from the metabolism of hyperpolarized ^{13}C labeled succinate. Based on our technique, only hyperpolarized metabolites will be seen with *in vivo* ^{13}C MRS. In our current experiments, we are seeing the left hand side of this diagram (fumarate, malate and aspartate).