Strong activation of NAD-ME2 dimer by CoA

25-fold increase in catalytic efficiency

NAD-Malic enzyme 2 Mg2+ CoA

NAD-Malic enzyme 2 Mg2+ CoA

CoA

NAD-Malic enzyme 2 Mg2+

NAD-Malic enzyme 2 Mg2+

fumarate

fumarate NAD-Malic enzyme 2 Mg2+

fumarate NAD-Malic enzyme 2 Mg2+

Weak inhibition of NAD-ME2 by fumarate in competition with malate at the active site

See Malate HUB

See TCA cycle

NAD-Malic enzyme 1 Mg2+

NAD-Malic enzyme 1 Mg2+

fumarate

NAD+

(S)-malate

NAD-Malic enzyme 1 Mg2+

NAD-Malic enzyme 2 Mg2+

fumarate

CoA

synergistic activation of NAD-MEH by fumarate and CoA

fumarate NAD-Malic enzyme 1 Mg2+

fumarate NAD-Malic enzyme 1 Mg2+

NADH

pyruvate

CO2

NAD-Malic enzyme 2 Mg2+ CoA

H+

Allosteric activation of NAD-ME1 dimer by fumarate

See TCA cycle

See Mitochondrial Pyruvate dehydrogenase

fumarate (S)-malate NAD-Malic enzyme 1 Mg2+

CoA (S)-malate NAD-Malic enzyme 2 Mg2+

H+

Highly active octamer (formed at low pH, high malate concentration, activators)-not yet observed in Arabidopsis

Plasma membrane