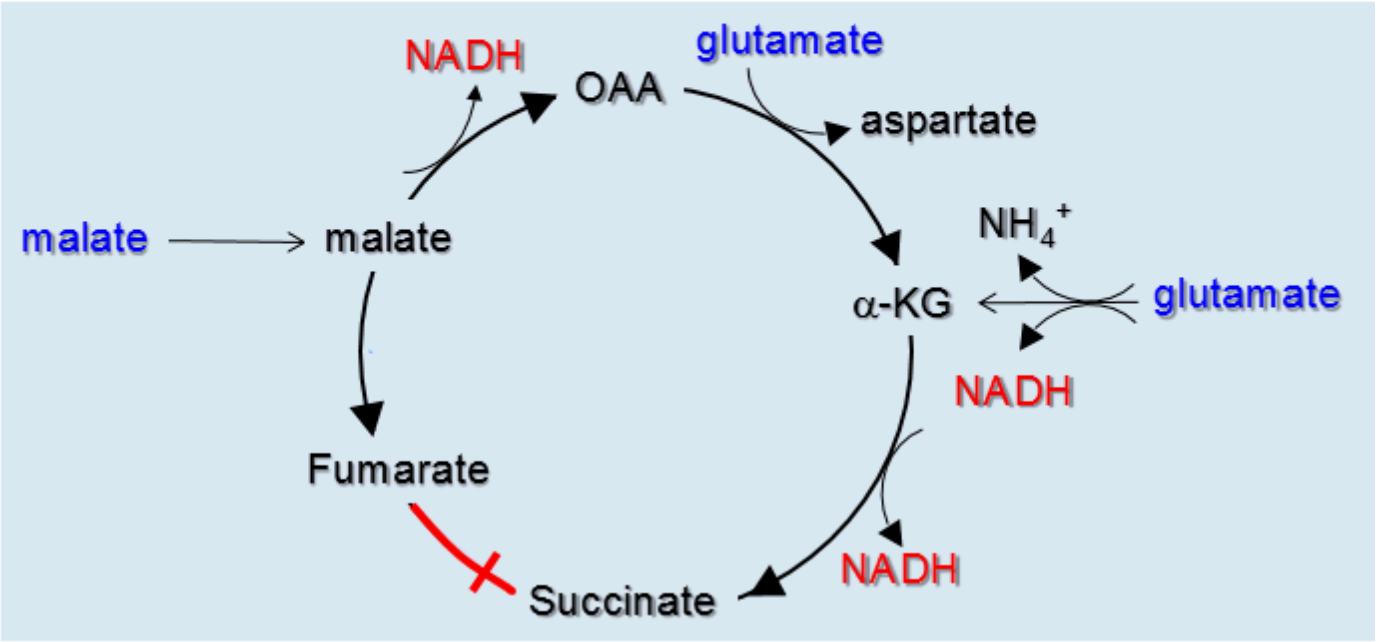
Type of file: figure
Label: Online Figure1
Filename: Online Figure I.tif



Online Figure I. Substrate combination of glutamate plus malate activates malate-aspartate shuttle and dehydrogenases of Krebs Cycle with reduction of NAD^+ to NADH, then feeding electrons into complex I and down the thermodynamic cascade through complex III to complex IV to O_2. Malate dehydrogenase oxidize malate to oxaloacetate (OAA) through reduction of NAD^+ to NADH. Glutamate and transaminase are responsible for the metabolism of oxaloacetate and α-ketoglutarate (α-KG), and reduction of NAD^+ to NADH. Complex II is not involved in respiration on glutamate + malate in isolated mitochondria because high added malate concentration equilibrates with fumarate as catalyzed by fumarase, which inhibits flux of succinate to fumarate. Therefore, substrate combination of glutamate plus malate is used to drive NADH-linked respiration.