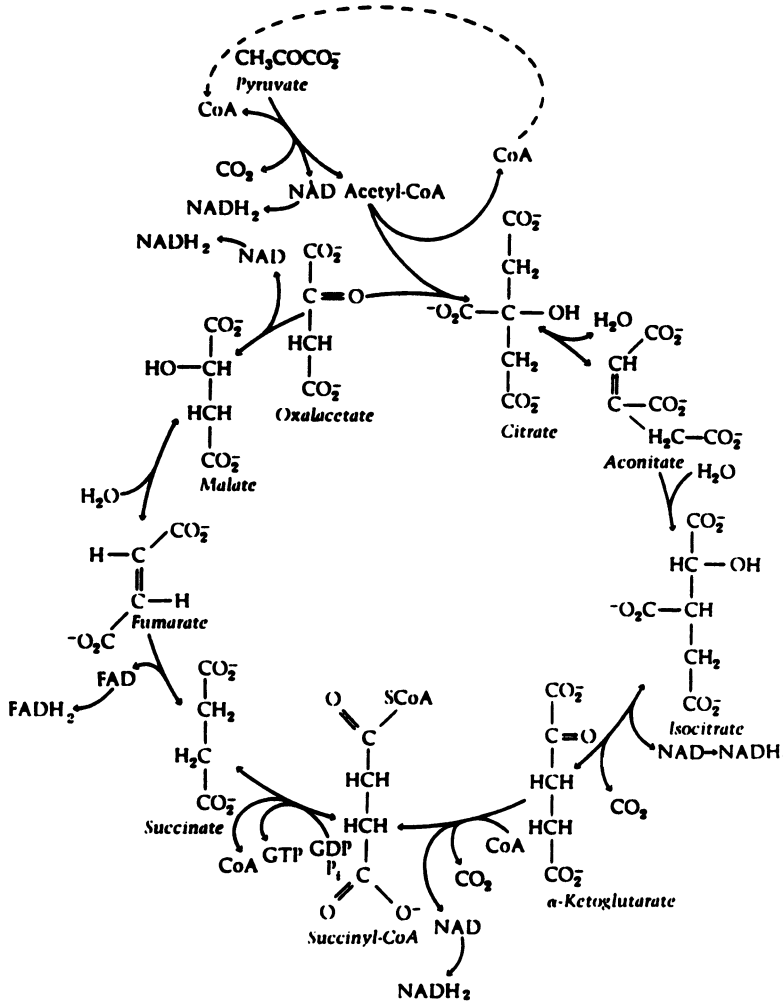

Overall reaction: Pyruvate + 4NAD + FAD → $3CO_2$ + $4NADH_2$ + $FADH_2$

GDP + phosphate → GTP

GTP + ADP → GDP + ATP

Oxidative phosphorylation: $4NADH_2 \equiv 12ATP$, $FADH_2 \equiv 2ATP$ | 15ATP

Figure 5.5. Krebs or TCA (tricarboxylic acid) cycle with energy yields based on eucaryotic cells. (With permission, from T. D. Brock, D. W. Smith, and M. T. Madigan, *Biology of Microorganisms*, 4th ed., Pearson Education, Upper Saddle River, NJ, 1984, p. 789.)

oxalacetate, with the expenditure of one ATP, using the enzyme pyruvate carboxylase. Malic enzyme promotes the reversible formation of malate from pyruvate and CO_2, using the reducing power of one molecule of NADPH + H^+.