



FIGURE 6.21. Carbon fixation. (A) Reductive tricarboxylic acid cycle. (B) Calvin cycle. (C) Hydroxypropionate and C₄ pathways. In the 3-hydroxypropionate cycle, CO₂ is fixed by acetyl-coenzyme A (CoA) and propionyl-CoA carboxylases eventually forming Maly-CoA. This is split into acetyl-CoA, to replenish the cycle, and glyoxylate, for use in cell carbon. (D) Reductive acetyl-CoA pathway. The reductive acetyl-CoA pathway is a noncyclic pathway. One CO₂ is captured on a special cofactor (tetrahydrofolate: T in the figure) and reduced to a methyl group. The other CO₂ is reduced to a carbonyl group (C=O) by carbon monoxide dehydrogenase and this enzyme-bound carbonyl group is combined with the methyl group to form acetyl-CoA by a collection of enzymes termed the acetyl-CoA synthase complex.

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