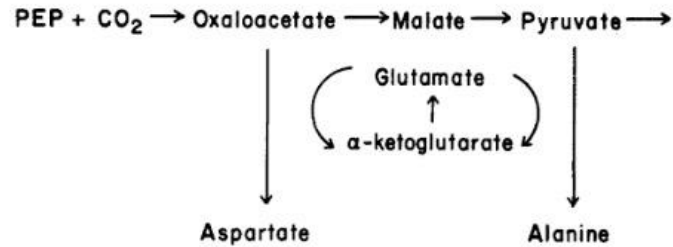


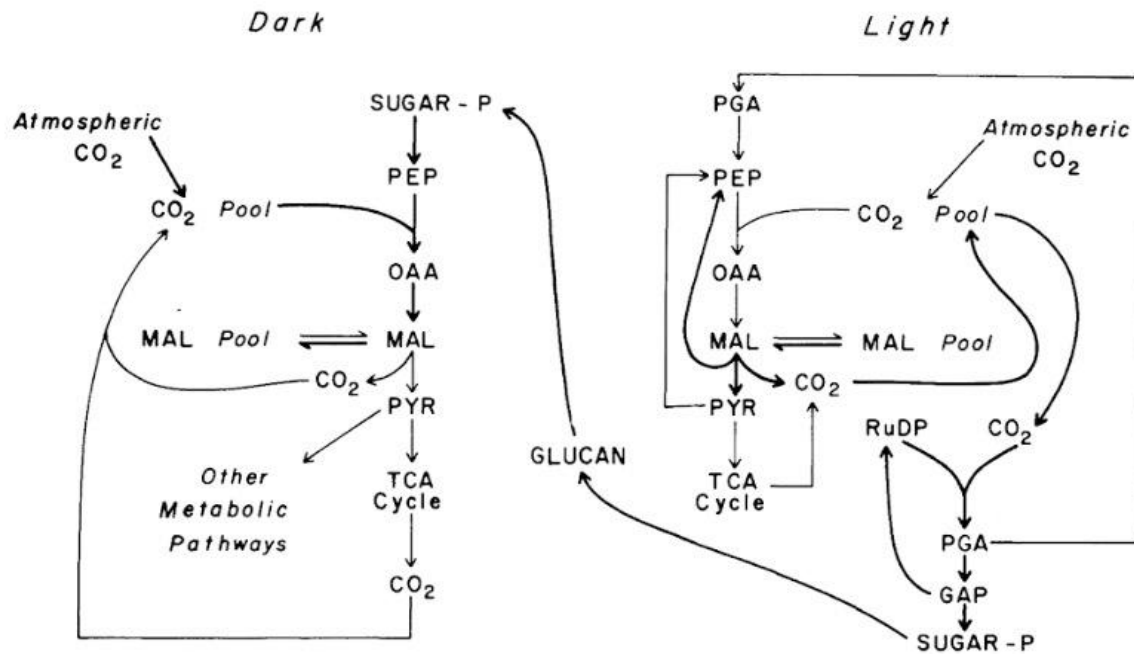
Plant Physiology, June 2017, Vol. 174, pp. 473–477,

**Figure 1.** Daytime metabolism of organic acids in  $C_3$  and CAM plants; arrow thickness denotes flux. A, Organic acids are directly derived from photosynthesis during the day. This model is obsolete for many  $C_3$  species due to the results of flux analyses. B, In many  $C_3$  plants, the use of organic acids is based on organic acids produced and stored during the night according to flux analyses. C, Daytime metabolism of organic acids in CAM plants. 2-OG, Oxoglutarate; CBBc, Calvin-Benson-Bassham cycle; CHOs, carbohydrates; OAA, oxaloacetate; Pyr, pyruvate; TP, triosephosphate.

## The Metabolic Pathway of CAM



**Fig. 3.12.** Main reactions of CAM resulting in the primary product, malic acid, and secondary products aspartate, alanine, and pyruvate. Tertiary and other products are formed by the usual reactions of intermediary metabolism



**Fig. 3.13.** The proposed metabolic pathway from storage carbohydrate to malic acid in the dark, and then to storage carbohydrate once again during the subsequent light period. Malic acid acts as a night storage molecule for  $\text{CO}_2$  which is donated to the reductive pentose phosphate cycle during the subsequent day. The proposed gluconeogenesis starting from PEP in the light is not given in this scheme

Crassulacean Acid  
Metabolism: Analysis of an  
Ecological Adaptation

M. Kluge, I. P. Ting  
Springer Science & Business  
Media, 1978

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картинке все три варианта

Amino Acids (2001) 20: 225–241

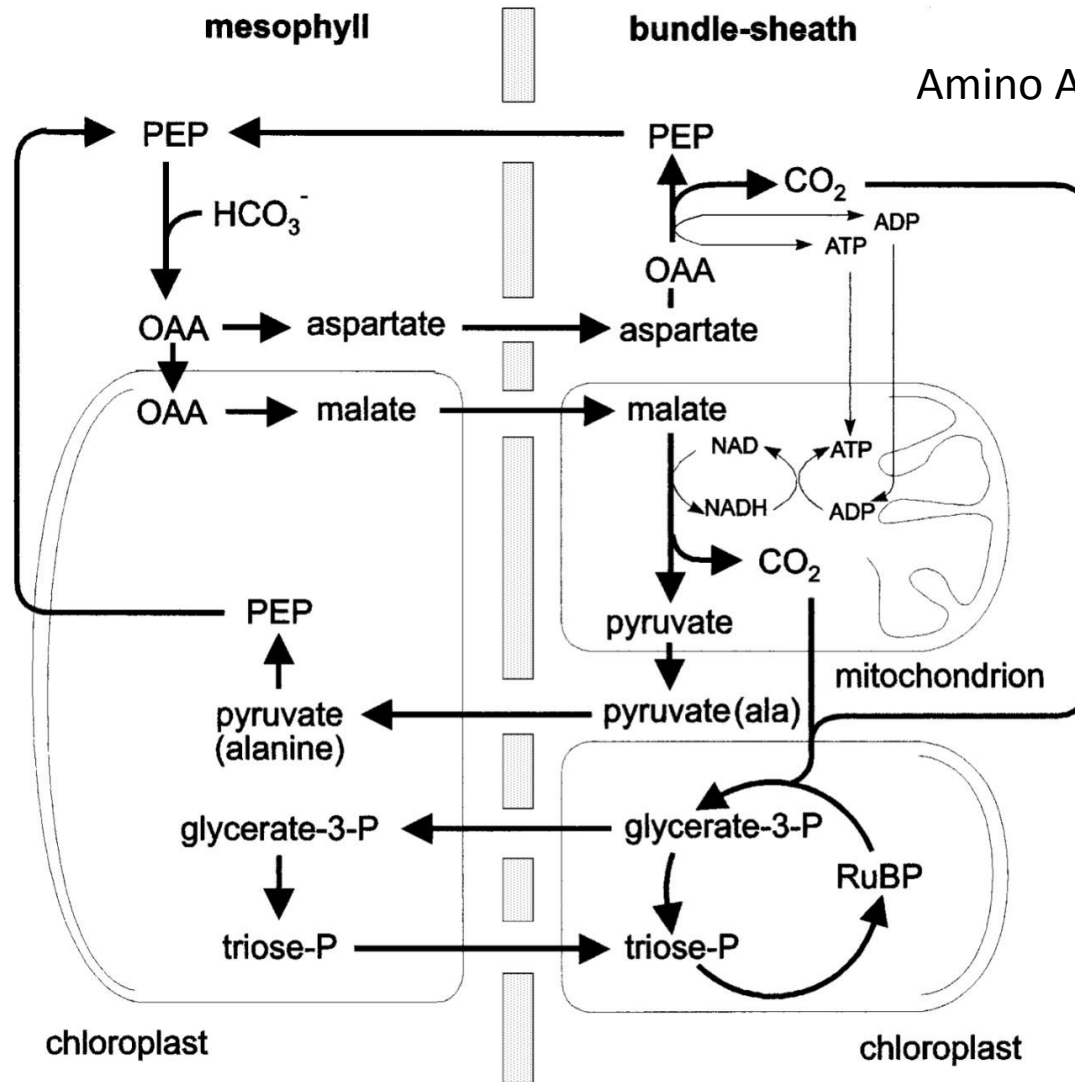


Fig. 1. The intracellular compartmentation of the PEP-carboxykinase type pathway of C4 photosynthesis. Note that both PEPCK and NAD-ME carry out the decarboxylation reactions. NADH formed by NAD-malic enzyme is used to generate the ATP required for PEPCK. Alanine and aspartate are shuttled between the mesophyll and bundle sheath cells, in order to maintain a balance of amino groups between the two compartments (Leegood, 1997)