TABLE II

POOL SIZES, TURNOVER RATES AND CONCENTRATIONS OF METABOLITES IN THE CHLOROPLAST AND EXTRACHLOROPLAST COMPARTMENTS OF SPINACH PALISADE PROTOPLASTS AFTER 4 MIN ILLUMINATION

The metabolite levels are taken from Table I and Fig. 6. The molecular turnover is calculated in the chloroplasts for a photosynthetic rate of 80 μmol CO_2 fixed/mg chlorophyll per h, and in the extrachloroplast compartment for sucrose synthesis at 52 μatom C/mg chlorophyll per h (22 nmol CO_2/mg chlorophyll per s and 1.2 nmol sucrose/mg chlorophyll per s, respectively). The calculations assume a unidirectional flow of carbon. The chloroplast volume is taken as 47 μl (Ref. 14, Table VI) and the cytosolic volume is assumed to be equal to the chloroplast volume.

Compartment	Compound	Molecules turned over per molecule of CO_2 fixed (chloroplast) or molecule sucrose synthesized (extrachloroplast)	Amount (nmol/mg chlorophyll)	Consumption (nmol per second) when CO_2 fixation is 80 μmol/mg Chl per h, sucrose synth. = 4.3	Half-time of pool turnover (s) to regenerate Rib-1,5-P_2 or sucrose	Concentration (mM)
Chloroplast	3-Phosphoglycerate	2	55.2	44	0.63	1.17
	Triose-*P*	2	27.4	44	0.31	0.58
	Fru-1,6-P_2	0.33	26.4	7.3	1.8	0.56
	Hexose-*P*	0.33	36.5	7.3	2.5	0.78
	Rib-1,5-P_2	1	24.7	22	0.56	0.52
	ATP	3	10.2	66	0.08	0.22
Extrachloroplast	3-Phosphoglycerate	4	29.2	4.8	3.0	0.62
	Triose-*P*	4	35.1	4.8	3.6	0.74
	Fru-1,6-P_2	2	6.0	2.4	1.2	0.02
	Hexose-*P*	2	78.3	2.4	16.2	1.66
	ATP	1	6.1	1.2	5.0	0.13