Table 7 Comparison of calculated theoretical maximal growth-linked carbon dioxide fixation and actual values for *Thiobacillus* species grown autotrophically under optimal conditions on inorganic sulfur compounds as the sole energy substrate. The theoretical CO_2 fixation was calculated as (ΔG° for oxidation)/(ΔG° for CO_2 fixation) = (ΔG° for oxidation)/113 = mol CO_2 fixed (mol substrate oxidized for energy)$^{-1}$. The observed CO_2 fixation was calculated from growth yields in the chemostat as mol CO_2 fixed (mol substrate oxidized for energy)$^{-1}$ (Kelly 1990)

Organism and substrate	ΔG° for complete oxidation (kJ mol^{-1})	Theoretical CO_2 fixation	Observed CO_2 fixation	Apparent efficiency of energy conservation (%)
Thiobacillus tepidarius				
Sulfide	–701.8	6.21	0.46	7.4
Thiosulfate	–750.1	6.64	0.55	8.3
Trithionate	–801.3	7.09	0.58	8.2
Tetrathionate	–1,244.6	11.01	1.04	9.4
Hexathionate	–2,346.1	20.76	1.40	6.7
Heptathionate	–2,803.2	24.81	1.79	7.2
Thiobacillus neapolitanus				
Thiosulfate	–750.1	6.64	0.40	6.0
Trithionate	–801.3	7.09	0.40	5.6
Thiobacillus denitrificans				
Thiosulfate (aerobic)	–750.8	6.64	0.81	12.2
Thiosulfate (denitrifying)	–750.8	6.64	0.57	8.6