

Table 5. ATP requirement for the formation of microbial cells from glucose and inorganic salts and the influence of various additions (amino acids and nucleic acid bases).

Macromolecule	ATP required (moles $\times 10^{-4}$ /g cells)			
	No addition	Amino acids	Nucleic acid bases	Amino acids plus bases
Polysaccharide	20.52	20.52	20.52	20.52
Protein				
amino acid formation	13.55	0	13.55	
polymerisation	191.40	191.40	191.40	191.40
Lipid	1.40	1.40	1.40	1.40
RNA				
nucleoside monophosphate formation	34.50	34.50	13.80	13.80
polymerisation	9.20	9.20	9.20	9.20
DNA				
deoxynucleoside monophosphate formation	8.64	8.64	3.84	3.84
polymerisation	1.92	1.92	1.92	1.92
Turnover mRNA	13.90	13.90	13.90	13.90
Total	295.03	281.48	269.53	255.98
ATP required for transport of				
Ammonium ions <sup>1</sup>	42.42	10.41	32.0	0
Amino acids	0	47.85	0	47.85
Potassium ions	1.92	1.92	1.92	1.92
Phosphate	7.74	7.74	7.74	7.74
Total ATP requirement	347.1	349.4	311.19	313.49
$Y_{ATP}^{MAX}$	28,8	28,6	32,1	31,9

<sup>1</sup> On basis of the data in Table 1 the N content of the cells is 11.8%. Per g cells there are 64.0 g-atom N  $\times 10^{-4}$  in amino acids and 20.84 g-atom N  $\times 10^{-4}$  in nucleic acids.