

TABLE 3. Quantities of aminoacyl-tRNA and their turnover in *E. coli* K38

Amino acid	Aminoacyl-tRNA <sup>a</sup> (molecules cell <sup>-1</sup> )	Amino acid in protein <sup>b</sup> (molecules cell <sup>-1</sup> s <sup>-1</sup> )	Turnover of aminoacyl-tRNA <sup>c</sup> (s <sup>-1</sup> )	Synthetase <sup>d</sup> (molecules cell <sup>-1</sup> )	Aminoacyl-tRNA:synthetase <sup>e</sup>	Activity of synthetase in vivo <sup>f</sup> (s <sup>-1</sup> )
Ala	4,000	13,390	3.3			
Arg	2,480	6,770	2.7	691	3.6	9.7
Asn	1,230	2,100	1.7			
Asp	3,670	15,930	4.3			
Cys	2,000	4,600	2.3			
Gln	730	4,980	6.8	1,013	0.72	4.9
Glu	880	1,730	2.0	873	1.0	2.0
Gly	4,370	10,210	2.3	682	6.4	14.7
His	1,900	4,030	2.1			
Ile	4,930	15,270	3.1	1,226	4.0	12.4
Leu	5,330	20,250	3.8	875	6.1	23.2
Lys	4,300	11,850	2.8	425	10.1	28.3
Met	4,020	7,630	1.9			
Phe	1,830	9,950	5.4	992	1.85	10.0
Pro	2,620	10,030	3.8			
Ser	6,270	51,090	8.1			
Thr	4,700	25,210	5.4	527	8.9	48.0
Trp	790	3,150	4.0			
Tyr	1,030	1,920	1.9			
Val	7,910	14,050	1.8	536	14.8	26.6

<sup>a</sup> The values were taken from Table 2.

<sup>b</sup> The rate of incorporation of amino acids into protein was measured in the presence of 10.5 μM <sup>3</sup>H-amino acid (specific activity 2,800 Ci/mol) in the same sample of bacterial cells used for determination of aminoacyl-tRNA.

<sup>c</sup> Obtained by dividing the amino acid in protein by the aminoacyl-tRNA.

<sup>d</sup> The values were recalculated from the data of Neidhardt et al. (21) for cells growing at doubling time 60 min and taking a value of 1.8 genomes per cell at this growth rate (3).

<sup>e</sup> Obtained by dividing aminoacyl-tRNA by synthetase.

<sup>f</sup> Obtained by multiplying turnover of aminoacyl-tRNA by the ratio of aminoacyl-tRNA to synthetase.