NUMERICAL BALANCE OF THE AMINO-ACIDS

By Stephen Coneglan

THERE ARE 20 AMINOACIDS

These are the building blocks of all living things.

Each amino-acid is made up of Carbon, Hydrogen, Nitrogen, Oxygen and Sulphur atoms. The mass of each of these atoms is known to 4 decimal places. See below.

1. **Hydrogen 1.0079 at:**
   http://www.elementsdatabase.com/el.php?id=4
2. **Carbon 12.0108 at:**
   https://books.google.co.nz/books?id=9l3o1K2B26QC&pg=PA12&lpg=PA12&dq=carbon+12.0108&source=bl&ots=FjjBYMWKTP&sig=ACfU3U31kb5kzirzrue0aY6FrQTZgy0VPQ&hl=en&sa=X&ved=2ahUKEwjb3Oyvzs7tAhWFyzgGHcYsDcsQ6AEwCHoECAUQAg#v=onepage&q=carbon%2012.0108&f=false
   In Arthur E. Morris, Gordon Geiger, H. Alan Fine: Handbook on Material and Energy Balance Calculations in Material Processing. John Wiley & Sons, Hoboken, New Jersey: 2011, page 12.
3. **Nitrogen 14.0065 at:**
   https://moen.tistory.com/14429
   https://core.ac.uk/download/pdf/322968441.pdf **Page 32**
   EUCASS2019-0091.pdf **Valentina König, Siegfried Müller and Michael Rom: Numerical investigation of transpiration cooling in supersonic nozzles. Page 9**
4. **Oxygen 15.9994 at:**
   http://www.elementsdatabase.com/el.php?id=11
5. **Sulphur 32.0645 at:**
   https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2013/Exam%20materials/6PH04_01_que_20110621.pdf **See Page 17, Question 17, Section (c), Part (ii)**
6. **Hydrogen 1.0079; Carbon 12.0108; Oxygen 15.9994 at:**
   https://en.intl.chemicalaid.com/tools/empiricalformula.php?composition=C%3D12.0108%25+H%3D1.0079%25+N%3D14.0067%25+O%3D15.9994%25
7. **Hydrogen 1.0079; Oxygen 15.9994 at:**
   https://www.lenntech.com/periodic-chart-elements/atomic-mass.htm

lphur has been taken to four decimal places. Some sources give a relative atomic mass figure of 32.064 for sulphur, and others give a figure of 32.065. We ve taken the middle ground figure of 32.0645 in extending it to the fourth decimal.

- **Sulphur 32.064 at:**
  https://webbook.nist.gov/cgi/formula?ID=C14701123&Mask=40
  https://www.accessscience.com/content/sulfur/667200
  https://memory-beta.fandom.com/wiki/Sulfur
  https://radiopaedia.org/articles/sulfur
  https://www.britannica.com/science/equivalent-weight
- **Sulphur 32.065 at:**
  http://www.boulderdan.com/elementfile.php?action=Sulfur
  https://www.livescience.com/28939-sulfur.html
  https://energyeducation.ca/encyclopedia/Sulfur
  https://webbook.nist.gov/cgi/cbook.cgi?ID=C7704349&Units=CAL&Mask=FFFFFF&Type=JANAFG&Plot=on
  https://www.chemeurope.com/en/encyclopedia/Isotopes_of_sulfur.html

Consequently, we can work out the exact mass of each amino-acid from the number of carbons, hydrogens, nitrogens, oxygens, and sulphurs in its molecule.

AMINO ACIDS BY RELATIVE ATOMIC MASS

Amino Acid			Atomic Mass Composition										Atomic Mass	
Amino Acid Full Name	Amino Acid 3-Letter	Amino Acid 1-Letter	Hydrogen	1.0079	Carbon	12.0108	Nitrogen	14.0065	Oxygen	15.9994	Sulphur	32.0645	Total Mass 4 Decimals	Total Mass 2 Decimals
Alanine	Ala	A	7	7.0553	3	36.0324	1	14.0065	2	31.9988	0	0	89.0930	089.09
Arginine	Arg	R	14	14.1106	6	72.0648	4	56.0260	2	31.9988	0	0	174.2002	174.20
Asparagine	Asn	N	8	8.0632	4	48.0432	2	28.0130	3	47.9982	0	0	132.1176	132.12
Aspartic Acid	Asp	D	7	7.0553	4	48.0432	1	14.0065	4	63.9976	0	0	133.1026	133.10
Cysteine	Cys	C	7	7.0553	3	36.0324	1	14.0065	2	31.9988	1	32.0645	121.1575	121.16
Glutamic Acid	Glu	E	9	9.0711	5	60.0540	1	14.0065	4	63.9976	0	0	147.1292	147.13
Glutamine	Gln	Q	10	10.079	5	60.0540	2	28.0130	3	47.9982	0	0	146.1442	146.14
Glycine	Gly	G	5	5.0395	2	24.0216	1	14.0065	2	31.9988	0	0	75.0664	075.07
Histidine	His	H	9	9.0711	6	72.0648	3	42.0195	2	31.9988	0	0	155.1542	155.15
Isoleucine	Ile	I	13	13.1027	6	72.0648	1	14.0065	2	31.9988	0	0	131.1728	131.17
Leucine	Leu	L	13	13.1027	6	72.0648	1	14.0065	2	31.9988	0	0	131.1728	131.17
Lysine	Lys	K	14	14.1106	6	72.0648	2	28.0130	2	31.9988	0	0	146.1872	146.19
Methionine	Met	M	11	11.0869	5	60.0540	1	14.0065	2	31.9988	1	32.0645	149.2107	149.21
Phenylalanine	Phe	F	11	11.0869	9	108.0972	1	14.0065	2	31.9988	0	0	165.1894	165.19
Proline	Pro	P	9	9.0711	5	60.0540	1	14.0065	2	31.9988	0	0	115.1304	115.13
Serine	Ser	S	7	7.0553	3	36.0324	1	14.0065	3	47.9982	0	0	105.0924	105.09
Threonine	Thr	T	9	9.0711	4	48.0432	1	14.0065	3	47.9982	0	0	119.1190	119.12
Tryptophan	Trp	W	12	12.0948	11	132.1188	2	28.0130	2	31.9988	0	0	204.2254	204.23
Tyrosine	Tyr	Y	11	11.0869	9	108.0972	1	14.0065	3	47.9982	0	0	181.1888	181.19
Valine	Val	V	11	11.0869	5	60.0540	1	14.0065	2	31.9988	0	0	117.1462	117.15
Totals			197	198.5563	107	1285.1556	29	406.1885	49	783.9706	2	64.1290	2738.0000	2738.00

THE 20 AMINOACIDS IN A TABLE

Aspartic acid D 133.1026	Arginine R 174.2002	Lysine K 146.1872	Histidine H 155.1542	Glutamic acid E 147.1292
Asparagine N 132.1176	Tryptophan W 204.2254	Tyrosine Y 181.1888	Phenylalanine F 165.1894	Glutamine Q 146.1442
Threonine T 119.1190	Glycine G 075.0664	Alanine A 089.0930	Proline P 115.1304	Serine S 105.0924
Isoleucine I 131.1728	Leucine L 131.1728	Cysteine C 121.1575	Methionine M 149.2107	Valine V 117.1462

LEFT MIRRORS RIGHT

Aspartic acid		Glutamic acid
D		E
133.1026		147.1292
Asparagine		Glutamine
N		Q
132.1176		146.1442
Threonine		Serine
T		S
119.1190		105.0924
Isoleucine		Valine
I		V
131.1728		117.1462

133.1026 + 132.1176 + 119.1190 + 131.1728 = 515.5120

147.1292 + 146.1442 + 105.0924 + 117.1462 = 515.5120

Aspartic acid		Glutamic acid
D		E
133.1026		147.1292
Asparagine		Glutamine
N		Q
132.1176		146.1442
Threonine		Serine
T		S
119.1190		105.0924
Isoleucine		Valine
I		V
131.1728		117.1462

133.1026 + 131.1728 = 264.2754

147.1292 + 117.1462 = 264.2754

132.1176 + 119.1190 = 251.2366

146.1442 + 105.0924 = 251.2366

LEFT MIRRORS RIGHT

174.2002 +
204.2254 +
075.0664 +
131.1728 =
584.6648

Arginine
R
174.2002
Tryptophan
W
204.2254
Glycine
G
075.0664
Leucine
L
131.1728

Histidine
H
155.1542
Phenylalanine
F
165.1894
Proline
P
115.1304
Methionine
M
149.2107

155.1542 +
165.1894 +
115.1304 +
149.2107 =
584.6847

174.2002 +
131.1728 =
305.3730

204.2254 +
075.0664 =
279.2918

Arginine
R
174.2002
Tryptophan
W
204.2254
Glycine
G
075.0664
Leucine
L
131.1728

Histidine
H
155.1542
Phenylalanine
F
165.1894
Proline
P
115.1304
Methionine
M
149.2107

155.1542 +
149.2107 =
304.3649

165.1894 +
115.1304 =
280.3198

LEFT MIRRORS RIGHT

Aspartic acid	Arginine
D	R
133.1026	174.2002

133.1026 + 131.1728 = 264.2754

174.2002 + 131.1728 = 305.3730

Histidine	Glutamic acid
H	E
155.1542	147.1292

155.1542 + 149.2107 = 304.3649

147.1292 + 117.1462 = 264.2754

Isoleucine	Leucine
I	L
131.1728	131.1728

Methionine	Valine
M	V
149.2107	117.1462

132.1176 + 119.1190 = 251.2366

146.1442 + 105.0924 = 251.2366

Asparagine	Tryptophan
N	W
132.1176	204.2254
Threonine	**Glycine**
T	G
119.1190	075.0664

Phenylalanine	Glutamine
F	Q
165.1894	146.1442
Proline	**Serine**
P	S
115.1304	105.0924

204.2254 + 075.0664 = 279.2918

165.1894 + 115.1304 = 280.3198

BUT WHAT IS THE COMPLETE IMAGE

146.1872 +
181.1888 +
089.0930 +
121.1575 =
537.6265

Lysine K 146.1872
Tyrosine Y 181.1888
Alanine A 089.0930
Cysteine C 121.1575

537.6265 / 2
= 268.81325

515.5120 +
584.6648 +
268.81325 =
1368.99005 =
37 x 37 - 0.00995

ine K 1872	Histidine H 155.1542	Glutamic acid E 147.1292
sine Y 1888	Phenylalanine F 165.1894	Glutamine Q 146.1442
nine A 0930	Proline P 115.1304	Serine S 105.0924
eine C 1575	Methionine M 149.2107	Valine V 117.1462

Aspartic acid D 133.1026	Arginine R 174.2002	Lys K 146.
Asparagine N 132.1176	Tryptophan W 204.2254	Tyro Y 181.
Threonine T 119.1190	Glycine G 075.0664	Alan A 089.
Isoleucine I 131.1728	Leucine L 131.1728	Cyst C 121.

515.5120 +
584.6847 +
268.81325 =
1369.00995 =
37 x 37 + 0.00995

WHAT IS MIRRORED IS THE SQUARE OF A PRIME NUMBER

37 x 37

WHAT IS THE EXACT SUM OF THE WHOLE?

2738.0000 = 37 x 37 x 2 exactly