

TABLE 2-2. Amino acids in whole unaltered^a human hair (amino acid micromoles per gram of dry hair).

Amino acid	Reference 12	Reference 13	Other references
1. Aspartic acid	444–453 ^b	292–578 ^c	
2. Threonine	648–673 ^b	588–714	
3. Serine	1013–1091 ^b	705–1090	
4. Glutamic acid	995–1036 ^b	930–970	
5. Proline	646–708 ^c	374–694 ^c	
6. Glycine	463–513 ^c	548–560	
7. Alanine	362–384 ^c	314	
8. Half-cystine	1407–1512 ^c	1380–1500	784–1534 [14 ^c]
9. Valine	477–513 ^c	470	
10. Methionine	50–56 ^b	47–67	
11. Isoleucine	244–255 ^c	366	
12. Leucine	502–529 ^c	489 ^e	
13. Tyrosine	177–195 ^c	121–171 ^c	
14. Phenylalanine	132–149 ^c	151–226	
15. Cysteic acid	22–40 ^c	—	
16. Lysine	206–222 ^b	130–212 ^c	
17. Histidine	64–86 ^c	40–77	
18. Arginine	499–550 ^c	511–620	
19. Cysteine	—	41–66	17–70 [14 ^c]
20. Tryptophan	—	20–64	
21. Citrulline	—	—	11 [16]
%Nitrogen as ammonia		15.5–16.9%	16.5% [15]

^aHair is assumed to be cosmetically unaltered for references 13, 14, 16.

^bNo significant differences among samples analyzed.

^cSignificant differences indicated among samples analyzed.

^dThese results are a compilation of results from several laboratories and therefore contain no basis for statistical comparison.

^eThese values are results of a microbiological assay by Lang and Lucas [17].