

TABLE 2-6. Amino acid composition of the different morphological components of hair.\*

Amino acid	Cuticle**	Whole fiber†	Medulla‡
Aspartic acid	287	449	470
Threonine	524	664	140
Serine	1,400	1,077	270
Glutamic acid	819	1,011	2,700
Proline	994	667	160
Glycine	611	485	300
Alanine	—	374	400
Half-cystine	2,102	1,461	Trace
Valine	634	499	320
Methionine	38	53	40
Isoleucine	184	249	130
Leucine	418	516	700
Tyrosine	132	184	320
Phenylalanine	91	142	—
Cysteic acid	68	29	—
Lysine	—	217	740
Histidine	—	71	100
Arginine	360	529	180
Ammonia	—	—	(700)
Citrulline	45	11	—

\*Data are expressed in micromoles amino acid per gram dry hair.

\*\*The data for cuticle analysis are based on the work of Bradbury et al. [16], who analyzed cuticle and whole fiber from several keratin sources, including human hair, merino wool, mohair, and alpaca. These scientists concluded that there is very nearly the same difference between the amino acid composition of the cuticle and each of these fibers from which it was derived. They listed the average percentage differences used in these calculations. More recent analyses of cuticle and whole fiber of human hair [69,70] are in general agreement with these data [18].

†Whole-fiber results approximated by cortex analysis [12].

‡These data are results of analysis of medulla derived from porcupine quill from Rogers [65].

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