

TABLE 4-1. Summary of Nutrients Indicated by Abnormal Amino Acid Results

Amino Acids	Low Result	High Result
Amino Acids for Polypeptides and Energy	Isoleucine (Ile) Leucine (Leu) Valine (Val) Histidine (His)	B ₆ , 100mg; Check for insulin insensitivity
	*	
	Folate, 800 mcg; His, 500mg TID	
	Lysine (Lys)	Carnitine, 1-2 g
	α -Aminoadipic acid (α AAA)	Vitamin C, 1 g BID; Niacin, 50 mg; B ₆ , 100 mg; Iron, 15 mg B ₆ , 100 mg; α KG, 600 mg BID
Neurotransmitters and Precursors	Threonine (Thr)	*
	α -Amino-Nbutyric acid (α ABA)	B ₆ , 100 mg; Zinc, 30 mg
	Phenylalanine (Phe)	*
	Tyrosine (Tyr)	Iron, 30 mg; Vitamin C, 1 gm TID; Niacin, 50 mg; Low Phe diet
Glycine, Serine and Related Amino Acids	Tryptophan (Trp)	Copper, 3 mg; Iron, 30 mg; Vitamin C, 1 gm TID B ₆ , 100 mg BID
	Glutamic Acid (Glu)	Niacin, 50 mg; B ₆ , 100 mg BID
	γ -Aminobutyric acid (GABA)	Niacin, 50 mg; B ₆ , 100 mg BID α KG, 600 mg BID; B ₆ , 50 mg
	Glycine (Gly)	Iron, 30 mg; Tyrosine, 500 mg TID; Vitamin C, 1 gm BID; Niacin 50 mg 5-HTP, 50 mg TID
	Serine (Ser)	B ₆ , 100 mg; α KG, 600 mg TID
Glycine, Serine and Related Amino Acids	Ethanolamine Phosphoethanolamine (PE)	Niacin, 50 mg; B ₆ , 100 mg BID
	Phosphoserine	Niacin, 50 mg; B ₆ , 100 mg BID
	Sarcosine	Niacin, 50 mg; B ₆ , 100 mg BID
		Niacin, 50 mg; B ₆ , 100 mg BID
		Niacin, 50 mg; B ₆ , 100 mg BID

TABLE 4-1. Continued

Supply and Removal of Amino Groups (Urea Cycle)	Alanine (Ala)	*	B ₆ , 100 mg
	Arginine (Arg)	* or Arg, 500 mg BID	Manganese, 15 mg
Sulfur-Containing Amino Acids	Aspartic Acid (Asp)	αKG, 600 mg BID; B ₆ , 100 mg	Magnesium, 200 mg BID; Zinc, 30 mg
	Asparagine (Asn)	Mg, 200 mg BID	
	Glutamine (Gln)		αKG, 600 mg BID; B ₆ , 100 mg
	Citrulline		Magnesium, 200 mg BID; αKG, 600 mg BID;
	Ornithine (Orn)	Arginine, 500 mg BID	B ₆ , 100 mg
Cystathionine Taurine (Tau)	Methionine (Met)	*	B ₆ , 100 mg; αKG, 600 mg BID; Magnesium, 200 mg BID; SAM, 200 mg BID
	Cystine (Cys)	NAC, 500 mg BID	B ₂ , 50 mg
	Homocystine (HCys)		B ₆ , 100 mg; Folate, 800 mcg; B ₁₂ , 1,000 mcg; Betaine, 1-2 g TID
Collagen-Related Amino Acids	Proline (Pro)		B ₆ , 100 mg
	Hydroxyproline (HPro)	Taurine, 300 mg BID; B ₆ , 100 mg	Vitamin E, 800 IU; Vitamin C, 1 g TID; β-Carotene, 25,000 IU; Coenzyme Q10, 30 mg; Lipote, 200 mg
	Hydroxylysine (Hlys)	αKG, 600 mg BID	Vitamin C, 1000 mg TID; Niacin, 50 mg
β-Amino Acids and Derivatives	β-Alanine		Vitamin C, 1000 mg TID; Iron, 15 mg
	Anserine		Vitamin C, 1000 mg TID; Iron, 15 mg
	Carnosine		Vitamin C, 1000 mg TID; Iron, 15 mg
	β-Aminoisobutyric acid		
Markers of Tissue Injury	1-Methylhistidine		Lactobacillus and Bifidobacteria; B ₆ , 100 mg
	3-Methylhistidine		Zinc, 30 mg
Assymetric dimethylarginine Methionine sulfoxide	3-Nitrotyrosine		Zinc, 30 mg
			B ₆ , 50 mg
			Vitamin E, 400 IU; B ₁₂ , 1,000 mcg; Folate, 800 mcg

* Low levels are generally best normalized with balanced or custom mixtures of essential amino acids