

Glucogenic

**Glucogenic
and
Ketogenic**

Ketogenic

**Alanine
Arginine
Asparagine
Aspartate
Cysteine
Glutamate
Glutamine
Glycine
Proline
Serine**

Tyrosine

Nonessential

**Histidine
Methionine
Threonine
Valine**

**Isoleucine
Phenyl-
alanine
Tryptophan**

**Leucine
Lysine**

Essential