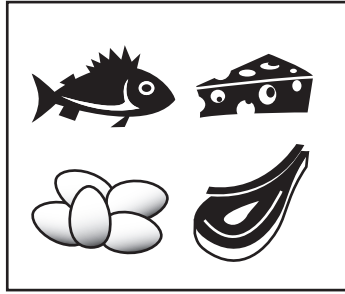
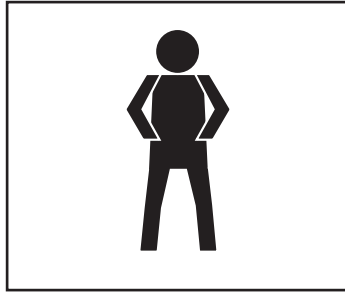


# Methylmalonic Acidemia (MMA)

**Normal**



Protein from food



Protein from muscles

Amino Acids

Isoleucine  
Valine  
Methionine  
Threonine

Other  
amino acids

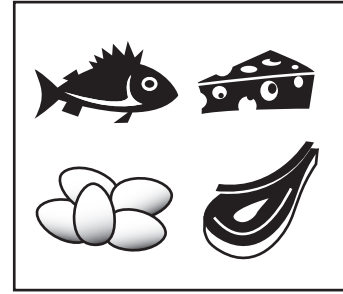
Essential  
enzyme

+ Vitamin B12

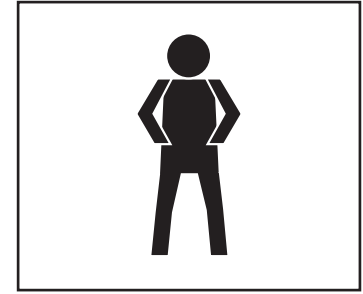
**Energy**

**Growth**

**MMA**



Protein from food



Protein from muscles

Amino Acids

Isoleucine  
Valine  
Methionine  
Threonine

Other  
amino acids

~~Essential  
enzyme~~

+ Vitamin B12

Energy

Growth

Build-up of  
methylmalonic acid +  
other harmful substances

**Health  
Problems**