

### **Creatine**

Creatine is an amino acid found in skeletal and cardiac muscle both in the free form (Cr) and in the phosphorylated form, creatine phosphate or phosphocreatine (PCr). PCr plays an integral role in rapid production of ATP from ADP during intense bouts of exercise.

### **Alkalinizers**

Alkalinizers is the generic name given to compounds which have an ability to increase the alkalinity of blood and body fluids. Examples include sodium bicarbonate and sodium citrate. Since lactic acid production is an inevitable result of glycolytic activity during sprinting, alkalinizers may play a part in addressing the likely changes in muscle pH from lactic acid accumulation.

### **Caffeine**

Caffeine is a naturally occurring compound found in many food and drink products. It is most widely used as a stimulant, and a major worldwide source is coffee. Caffeine may benefit athletes not only due to its stimulant properties but also because it stimulates release of fatty acids from adipose tissue.

### **Carnitine**

Carnitine is a compound found in the membrane of mitochondria and is involved in the transport of long-chain fatty acids from the cytoplasm into the matrix of the mitochondria. Since the rate of entry of fatty acids into the mitochondria is a potential rate-limiting stage in the use of fatty acids as energy sources for prolonged exercise, there may be consideration to enhance mitochondrial carnitine levels and so promote fat oxidation.

### **MCTs**

Medium-chain triglycerides (MCTs) are artificially produced compounds in which medium chain fatty acids are attached to a glycerol molecule. These compounds are more easily digested and rapidly absorbed across the intestine than long-chain fatty acids and could therefore be a potential useful lipid source of energy. In addition, medium-chain fatty acids can pass across the mitochondrial membrane without the need for carnitine transport. This more rapid uptake by the mitochondria may also be of benefit to athletes as an energy source during prolonged exercise.

### **Glutamine**

Glutamine is the most abundant amino acid in the blood and also in the body's amino acid pool. It has been stated that appropriate levels of glutamine are required for optimal immune function.

### **Antioxidants**

Intense or prolonged exercise demands a significant oxygen uptake by the body. Such an increase in oxygen consumption leads to an enhanced production of free radicals and concomitant related cell damage. The body uses antioxidants as a means of quenching free radicals and the damage they cause (notably to membranes). Antioxidants in foods include vitamins C and E as well as selenium. These compounds may protect muscle from damage during exercise.