

Research & Development Bulletin

RAISING GLUTATHIONE USING CYSTEINE

Enhancement of glutathione levels through cysteine supplementation has proven an important health benefit. But consumers have questions about the best available source of cysteine. Immunotec provides the answer.

IN SEARCH OF THE BEST STRATEGY FOR CYSTEINE SUPPLEMENTATION

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A series of clinical studies and complementary laboratory experiments has shown that aging is associated with a progressive decrease in plasma cysteine and intracellular glutathione concentrations. This decrease leads to (and can be viewed as a manifestation of) age-related oxidative stress. Cysteine and glutathione concentrations are particularly low during the night and early morning hours, i.e. during periods of starvation.

Several clinical studies have also shown that cysteine supplementation on top of the regular diet ameliorates several aging-related processes and improves amongst other parameters skeletal muscle functions and inflammatory cytokine levels. Most of these studies have been performed with N-acetylcysteine (NAC). This was the best choice for this purpose because the free amino acid cysteine is not very stable and cysteine-rich proteins such as IMMUNOCAL® contain various different amino acids and would not have been helpful in studies designed to identify cysteine as the most important amino acid in this context.

The search for the best strategy to supply additional amounts of cysteine to the average consumer is now raising a very different and practical question. Not surprisingly the answer is different.

Let us compare NAC with IMMUNOCAL®. NAC has some adverse effects which are not shared by IMMUNOCAL® and which render NAC unattractive as a source of cysteine over long periods of time. In addition, there are studies to suggest that dietary cysteine from any source is converted within the blood into its less accessible derivative cystine and within the liver into its breakdown product sulfate unless it is rapidly cleared from the blood by protein synthesis in skeletal muscle and other tissues. The undenatured whey protein IMMUNOCAL® provides all protein-forming amino acids and is known to stimulate rapid protein synthesis within less than 2 hours. This process allows the body to store cysteine until it is recovered by regulated protein breakdown during periods of starvation, i.e. during the night and early morning hours. IMMUNOCAL® is clearly superior to NAC in stimulating this process of cysteine storage.