The Role of Nucleotides in the Immune and Gastrointestinal Systems: Potential Clinical Applications


Purpose:
Review the data showing the physiological actions and biological benefits of supplying nucleotides exogenously, and applications for inclusion in clinical nutritional products.

Background:
- Nucleotides are biological molecules that carry one of five different purine or pyrimidine bases: adenine, guanine, thymine, cytosine or uracil.
- The diet of healthy individuals normally contains 1-2 g of nucleotides per day, primarily from protein.

Physiological Actions and Biological Benefits:
- Major metabolic functions of nucleotides include: precursors of DNA and RNA, cell division and protein synthesis. They are integral to almost all biological processes in the body.
- Dietary nucleotides are conditionally essential in the presence of various physiological stresses, including growth and development, recovery from injury, infection and certain disease states.

Potential Clinical Applications:
- Nucleotides, as part of immunonutrition formulas, are considered one of several defined substances that are designed to restore cellular defense function.

Conclusions:
Healthy individuals consuming a varied diet should meet their nucleotide demands, coupled with endogenous synthesis. However, nucleotide requirements increase in various states of physiological stress. In these circumstances, dietary nucleotides are considered conditionally essential to maintain optimal physiological function.