

Expression (5)  
 Gene (2)  
 Grants (28)  
 Microarray (5)  
 Molecule (130)  
 Multimedia (4)  
 Phenotype (2)

NIF REGISTRY (0)

LITERATURE (958296)



*From Watermelon*  
 AA

Name:

L-Citrulline

Citrulline is an amino acid. It is made from ornithine and carbamoyl phosphate in one of the central reactions in the urea cycle. It is also produced from arginine as a by-product of the reaction catalyzed by NOS family. Its name is derived from citrullus, the Latin word for watermelon, from which it was first isolated. Pharmacology: A non-essential amino acid and a precursor of arginine. Citrulline supplements have been claimed to promote energy levels, stimulate the immune system and help detoxify ammonia (a cell toxin). L-citrulline is made from L-ornithine and carbamoyl phosphate in one of the central reactions in the urea cycle. It is also produced from L-arginine as a by-product of the reaction catalyzed by the enzyme NO synthase. L-citrulline, while being an amino acid, is not involved in protein synthesis and is not one of the amino acids coded for by DNA. Although citrulline cannot be incorporated in proteins during protein synthesis, several proteins are known to contain citrulline as an amino acid. These citrulline residues are generated by a family of enzymes called peptidylarginine deiminases (PADs), which convert the amino acid arginine into citrulline. Proteins that contain citrulline residues include myelin basic protein (MBP), fillagrin and several histone proteins. Mechanism of action: L-citrulline is converted to L-arginine by argininosuccinate synthase. L-arginine is in turn responsible for citrulline's therapeutic effects. Many of L-arginine's activities, including its possible anti-atherogenic actions, may be accounted for by its role as the precursor to nitric oxide or NO. NO is produced by all tissues of the body and plays very important roles in the cardiovascular system, immune system and nervous system. NO is formed from L-arginine via the enzyme nitric oxide synthase or synthetase (NOS), and the effects of NO are mainly mediated by 3',5'-cyclic guanylate or cyclic GMP. NO activates the enzyme guanylate cyclase, which catalyzes the synthesis of cyclic GMP from guanosine triphosphate or GTP. Cyclic GMP is converted to guanylic acid via the enzyme cyclic GMP phosphodiesterase. NOS is a heme-containing enzyme with some sequences similar to cytochrome P-450 reductase. Several isoforms of NOS exist, two of which are constitutive and one of which is inducible by immunological stimuli. The constitutive NOS found in the vascular endothelium is designated eNOS and that present in the brain, spinal cord and peripheral nervous system is designated nNOS. The form of NOS induced by immunological or inflammatory stimuli is known as iNOS. iNOS may be expressed constitutively in select tissues such as lung epithelium. All the nitric oxide synthases use NADPH (reduced nicotinamide adenine dinucleotide phosphate) and oxygen (O<sub>2</sub>) as cosubstrates, as well as the cofactors FAD (Flavin adenine

Description: