

蛋白质自由基损伤的保护和修复

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纵然具有酶和非酶系统保护人体免受活性氧自由基的损伤, 但一旦两者间失去平衡就会造成各种疾病^[1]。考虑到蛋白质占了人体干重的 20%, 所以蛋白质应当是活性氧进攻的主要靶物质之一^[2]。

研究表明, 羟基肉桂酸衍生物、黄酮类等天然抗氧化剂不仅能有效清除体内活性氧, 而且能有效修复其对蛋白质的氧化性损伤。近些年来, 研究工作除关注蛋白质受活性氧损伤及其保护的机理外^[3], 也对蛋白质氧化性损伤的稳态产物、天然抗氧化剂与清除活性氧的构效关系等开展探索。但是有关蛋白受活性氧进攻的位点以及由此进攻造成的分子水平上的修饰等, 还有待在更为广泛的研究基础上得以确认。

关键词 活性氧, 抗氧化剂, 蛋白

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The protection and repair of radical damages to proteins

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Reactive oxygen species (ROS) induce a lot of disease when the balance breaks between ROS and the enzymic and non-enzymic systems in human body to effectively scavenge ROS and prevent them from damaging the body. Proteins, which account for about 20% dry weight of a human cell, may be major target of attacks by ROS.

It has been found that hydroxycinnamic acid, flavonoids and some other natural anti-oxidants can scavenge ROS inside body organs and tissues, and repair effectively oxidization damages to proteins. In recent years, studies have been focused on mechanisms of the ROS caused damages to proteins, and on protecting proteins against ROS. In the meantime, explorations have been made on analyzing stable products of proteins involved in oxidation by ROS and on relationships between scavenging effects of natural anti-oxidants and their molecular structures.

However, there are problems remaining before us for answers by still more investigations, such as what is the ROS attacking position on a protein macromolecule and how is the molecular modification of the ROS-attacked protein.

KEYWORDS Free radical, Antioxidant, Protein

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