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CHAPTER 2

LIVER AND KIDNEY PROTECTIVE EFFECTS OF THE POLYPHENOLS, TOCOPHEROLS AND CAROTENOIDS

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The liver and kidney form the human major excretory systems. During the process of xenobiotic elimination they are exposed to harmful metabolites or reactive intermediates that are capable of oxidizing proteins and lipids. Due to this, the liver and kidney generally face the risk of lipid peroxidation and subsequently, damage to the affected structures of the organs. On the basis of halting the oxidizing effect of the reactive species that may be generated during the process of elimination, numerous studies on the use of polyphenols, tocopherols and carotenoids have been conducted and have shown evidence on the protective effect on these organs. Various mechanisms have been proposed, including quenching of singlet oxygen of by the carotenoids and hence preventing glutathione (GSH) depletion in the liver. In the kidney, nephrotoxicity may occur with compounds that are naturally nephrotoxic and excreted unchanged through the renal route. With the polyphenols, the proposed mechanism of the renoprotection include: 1. enhancing the antioxidant defense system; 2. reducing oxidative stress and; 3. increasing level of nitic oxide (NO) in endothelial cells. These effects occur directly in the kidney.