The protective effect of some polyphenolic compounds on lipopolysaccharide-induced hepatitis in D-galactosamine sensitized rats

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Abstract

To study the hepatoprotective effect of tea and cocoa extracts against liver injury and to know the potent effect of each in protecting the liver from Lipopolysaccharide-induced hepatitis in D-galactosamine sensitized rats. Eighteen healthy male rats were used in this study and divided into eight groups; group I and V received saline, groups II and VI received black tea, groups III and VII received green tea, groups IV and VIII received cocoa extracts orally for one month, then groups V, VI, VII and VIII received D-galactosamine and Lipopolysaccharide for induction of hepatitis. Serum liver enzymes, liver oxidants/antioxidants profile and tumor necrosis factor-α were estimated. The data showed that all used extracts had a protective effect against liver injury. Although, green tea extract showed the maximum improvement in liver enzymes and antioxidants levels, cocoa extract showed the maximum improvement in tumor necrosis factor-α level compared to green and black tea prophylactic groups. We concluded that tea and cocoa had a protective effect against liver injury which attributed to their free radical scavenging antioxidants that reduced both the production and release of tumor necrosis factor-α and protected the liver from oxidative damage.
Frequent inadequate supply of micronutrients in fast food induces oxidative stress and inflammation in testicular tissues of weanling rats

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Abstract

Fast food is high in energy density and low in essential micronutrient density, especially zinc (Zn), of which antioxidant processes are dependent. We have tested the hypothesis that frequent fast food consumption could induce oxidative damage associated with inflammation in weanling male rats in relevance to Zn deprivation, which could adversely affect testis function. Zn and iron (in plasma and testicular tissue), plasma antioxidant vitamins (A, E, and C), as well as testicular superoxide dismutase (SOD) and reduced glutathione (GSH), lipid peroxidation indexes (thiobarbituric acid reactive substances (TBARS) and lipoprotein oxidation susceptibility (LOS)), and inflammatory markers (plasma C-reactive protein (CRP) and testicular tumour necrosis factor-alpha (TNF-α)) were determined. Serum testosterone and histological examination of the testis were performed also. We found a severe decrease in antioxidant vitamins and Zn, with concomitant iron accumulation. Zinc deficiency correlated positively with SOD, GSH, antioxidant vitamins and testosterone, and negatively with TBARS, LOS, CRP and TNF-α, demonstrating a state of oxidative stress and inflammation. We concluded that micronutrient deficiency, especially Zn, enhanced oxidative stress and inflammation in testicular tissue leading to under-development of testis and decreased testosterone levels.