Nephroprotective and Hepatoprotective Effects of the Coconut Water and Caffeic Acid in Oxidative Stress Mediated by Acetaminophen

Silva R.P.¹, Dantas L.S.¹, Matos I.A.¹, Chaves Filho A.B¹, Pinto I.F.D.¹, Vasconcelos D.F.¹, Otsuka, F. A. M.¹, Santos D.M.¹, Matos H.R.¹

¹Laboratório de Estresse Oxidativo e Patologias Relacionadas – LEOPAR. Departamento de Fisiologia, Universidade Federal de Sergipe, UFS - Sergipe, Brazil.

Acetaminophen (AAP) causes a potential hepatic centrilobular necrosis when taken in overdose. Studies have shown that this drug at high doses can produce kidney necrosis in mammals. Thus, this work aims to evaluate the antioxidant potential and the nephroprotective and hepatoprotective effects of the green dwarf coconut water and caffeic acid in the liver, kidney and plasma of rats treated with acetaminophen. Coconut water was effective to inhibit plasma (34.2%), liver (39.9%) and kidney (24.4%) lipoperoxidation in comparison with the acetaminophen group (p<0.1). Similar results were found in all doses tested of caffeic acid. The concentration of GSH in the liver was recovered in rats treated with coconut water (22.65 µmol/g protein) when compared to the group treated with acetaminophen (4.13 µmol/g protein, p<0.05), contrary to the caffeic acid group, which showed low levels of GSH. Doses of 10 and 15 mg/Kg of caffeic acid were effective to reduce the concentration of NO in liver (0.10 µmol/g protein and 0.16 µmol/g protein, respectively) compared to the acetaminophen group (0.50 µmol/g protein, p<0.05). The group treated with coconut water also showed significant reduction in the levels of NO (0.20 µmol/g protein, p<0.05), as reduced as by N-acetylcysteine (0.14 µmol/g protein, p<0.05). These data indicate that the green dwarf coconut water and caffeic acid have hepatoprotective and nephroprotective activities related to the reduction of oxidative stress induced by acetaminophen metabolism.

Keywords: Acetaminophen, Coconut water, Oxidative stress.

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