CRAFT BEER CONSUMPTION INCREASES BIOAVAILABILITY OF NON-ENZYMATIC ANTIOXIDANTS IN CARBON TETRACLHORIDE ANIMAL MODEL

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Introduction and objectives

Craft beers have been identified as having important antioxidant properties. However, the possible hepatoprotective effects of craft beer consumption have not been investigated so far. Thus, the aim of this study was to investigate if pre-treatment with craft beer could prevent or attenuate oxidative damage induced by carbon tetrachloride (CCl₄) in male Wistar rats.

Material and methods

The study protocol was approved in the CEUA-UFRGS ethics committee (27632). Male Wistar rats (70 in total) were randomly divided into 4 experimental groups and supplemented for 30 days in drinking bottle with: water, alcohol 6.7%, large-scale beer or craft beer every night. During the day, all groups received just water. Experimental groups were further divided in 2 subgroups and received (intraperitoneally) CCl₄ (2,5ml/kg) or mineral oil. Biological samples (fats, liver and serum) were collected 12h after the injections. All collected tissues were weight (liver and abdominal fats) and serum biochemical profile and liver redox profile were analysed.

Results and conclusion

Craft beer + mineral oil injection increased retroperitoneal fat and decreased SOD activity in serum and liver, but induced no changes in body weight gain. Craft beer + CCl₄ injection decreased the AUC of TRAP test in serum. However, CCl₄ injection increased tissue weight and SOD activity in the liver, but decreased glycogen content. Treatment with CCl₄ increased ALT, AST activities and increased lipid fractions (LDL, total cholesterol and triglycerides) in serum. On the other hand, CCl₄ administration decreased glucose levels and antioxidant enzymes activity (SOD and GPX). Overall, our data suggest that craft beer was able to increase non-enzymatic antioxidant content, but was unable to attenuate the hepatic damage induced by CCl₄. Nevertheless, these results suggest that the antioxidants components of craft beer are bioavailable and are probably stocked in other organs, such as the retroperitoneal fat.

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Key words: Antioxidant, Carbon Tetrachloride, Craft Beer.