Freeze-Dried Jaboticaba Peel Powder improves systemic antioxidant capacity in obese rats

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The jaboticaba (a Brazilian fruit) peel is rich in anthocyanins, known by its effect on in vivo antioxidant capacity improvement. The aim of this study was to inspect plasmatic and tissues antioxidant capacity (AC) and lipid peroxidation (LP) in rats fed high-fat diets added with 1, 2 and 4% of freeze-dried jaboticaba peel (FJP). Thirty weaned Sprague-Dawley male rats were divided into 5 groups. Four groups were induced obesity by high-fat diet (35% lipids). Three of these groups received the same diet added with 1, 2 and 4% FJP. Blood and tissues were collected after 40 days of treatment and their total AC (FRAP and TEAC) and LP (TBARS) were evaluated. The addition of 2 and 4% FJP on high-fat diet was capable to increase plasma AC 1.61 times. All FJP diets prevented the LP induced by high-fat diet in liver and 4% FJP increased the liver AC 1.19 times. The kidneys of animals fed 2 and 4% FJP diets had their AC increased by 33%. Additions of 1 and 4% FJP showed the highest spleen AC values (20 and 30% greater). Brain/cerebellum exhibited a dependent dose response: LP decreased with increasing FJP. Furthermore, 1 and 4% FJP increased 42% and 28% brain/cerebellum AC in the rats, respectively. Thus, the FJP inclusion on diet could enhance the AC in plasma, liver, kidneys, spleen and brain/cerebellum. The FJP also improves the LP in obese animals. Therefore, the jaboticaba peel could be a natural alternative for treating oxidative stress arising from obesity.