ABSTRACT: In aquaculture, the development of feeds with bioactive additives has shown to be important to not only to satisfy nutritional needs, but also to improve several biochemical and physiological functions as antioxidant capacity, growth promotion, and immune responses, for example. Research reports that the intake of antioxidants can modulate pathways and inhibit pro-oxidant processes in animal metabolism. The açaí fruit (Euterpe oleracea) have high levels of polyphenols and monounsaturated fatty acids and, in this study, the effects of lyophilized E. oleracea (LEO) were evaluated on biochemical parameters related to energetic metabolisms in the muscle of tambaqui Colossoma macropomum juveniles. The experiment was approved by the Ethics Committee of Animal of the Instituto Federal do Pará – IFPA (CEUA nº 3095220419). Fish (0.92 ± 0.01 g) were randomly distributed in 18 tanks (200 L; 50 fish/tank) and fed with a control feed and five diets with levels of inclusion of LEO at 0.00, 0.63, 1.25, 2.50, 5.00, and 10.0% (w/w). Fish were hand-fed four times a day at 10% of body weight for 30 days. All levels of dietary inclusion of açaí as well as the control diet treatment were performed in triplicate. The water quality parameters were monitored and maintained within the recommended ranges for the species. After this trial feeding, fish were sampled (n = 15/treatment) for the determination of protein, cholesterol, triglycerides, glucose and glycogen levels and electron transport system (ETS) in the muscle. The data obtained were submitted to a linear mixed effects model followed by Newman-Keuls post-hoc test (5%) for comparing the means. No statistical differences were found in energy reserves, except for muscle triglycerides, which decreased by 40.52% from the inclusion of 0.63% LEO (17.58 ± 1.35 mg/dL) in the diet with respect to control (29.56 ± 1.68 mg/dL). The ETS activity measure the mitochondrial electron transport chain, which indicates cellular metabolic potential. In this study, the açaí inclusion induced ETS activity in fish fed with LEO at 1.25% to 10.0% (13106.75 ± 1080.733 mg de O2 / h mg prot and 18133.15 ± 1458.98 mg de O2 / h mg, respectively), being significantly lower in the control diet (7436.13 ± 919.72 mg de O2 / h mg prot) and 0.63% LEO (7067.47 ± 800.822 mg de O2 / h mg prot) groups. These results indicate that decreased in triglyceride storage on muscle could be associated with higher energy production from lipid oxidation, promoted by LEO. Therefore, the dietary administration of 1.25% LEO is adequate to optimize the energy efficiency of the organism and to favor physiological functions such as growth in the tambaqui.

Key words: Amazonian frui; Antioxidant; Energy reserves; Mitochondrial respiration; Teleosts.

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