The aim of this study was to evaluate the energy and oxidative balance in cats supplemented with fish oil and the presence of oxidative and liver damage after a challenge with acetaminophen. Eight sterilized female cats were fed with commercial concentrate and allotted into groups \((n = 4)\), C (control) and AP (8% fish oil in the diet) for 60 days \((d)\). Body weight, body condition, body mass index, blood markers for energy (triacylglycerol, cholesterol, free fatty acids), oxidative damage (malondialdehyde \([\text{MDA}]\), erythrocyte osmotic fragility \([\text{FOE}]\) and Heinz bodies \([\text{HB}]\)) and antioxidative status (glutathione peroxidase, copper, zinc) were determined on \(d 0, 10, 20, 30, 40, 50\) and 60. At \(d 60\), cats were challenged with acetaminophen \((100\text{mg/kg po})\) and blood samples were obtained at 0, 4, 24, 72 and 120 hours to determine oxidative (MDA, HB) and liver damage (ALT and ALP). Supplementation with fish oil increased body weight \((16\%)\) without inducing oxidative damage. Meanwhile acetaminophen challenge increased plasma ALP activity and erythrocyte MDA, with higher values of FOE in AP group compared to C. It was concluded that cats supplemented in the diet with 8% fish oil increased their weight without changes in their antioxidant status or susceptibility to oxidative stress. However, an increased erythrocyte osmotic fragility was determined after a challenge with acetaminophen, which is why it is not recommended the use of fish oil as a dietary supplement.

**Keywords**

Cats, acetaminophen, oxidative stress, fish oil.