

Antioxidant defenses and hematological changes in pacu (*Piaractus mesopotamicus*) in response to different lipid sources

Maria Lidia Carra*1; Fernanda Garcia Sampaio2; Vitória Teodoro Gonçalves1;
Genoefa Amalia Dal'Bo3; Marcos Eliseu Losekann2; Ricardo Borghesi4; Lia Ferraz
Sucassas5; Marília Oetterer6

*1Graduanda em Engenharia Ambiental, Faculdade de Jaguariúna, Jaguariúna, SP, Brasil;
2Pesquisadores, Empresa Brasileira de Pesquisa Agropecuária -Embrapa Meio Ambiente; Rod SP 340,
km 127,5 -13820-000 – Jaguariúna – SP - fernanda.sampaio@embrapa.br; 3 Pós-Graduação em Patologia
Clínica Veterinária, Instituto Brasileiro de Veterinária, Jaguariúna, SP, Brasil; 4 Pesquisador, Empresa
Brasileira de Pesquisa Agropecuária – Embrapa Pantanal, Corumbá, MS; 5 Pesquisador Departamento de
Agroindústria, Alimentos e Nutrição da ESALQ/USP, Piracicaba, SP, Brasil; 6 Professor do
Departamento de Agroindústria, Alimentos e Nutrição da USP, Piracicaba, SP, Brasil.

Replacing fish oil with vegetable oil in fish feed has become a normal practice in aquaculture due to limited sources. The present study was carried out to evaluate hematological parameters and oxidative stress measuring the erithrogram, leukogram, the liver lipid peroxidation (LPO), and the activity of catalase (CAT) and glutathione S-transferase (GST) of juveniles of pacu (*Piaractus mesopotamicus*). Fish were fed with isoenergetics (3.200 kcal DE/kg) and isoproteic (28% DP) diets containing different oils and combination of them in a completely randomized design: sunflower oil (SO), canola oil (CO), linseed oil (LO) and fish oil (FO) and a blend of linseed oil + fish oil (L+FO), and linseed oil + canola oil (L+CO) fed *ad libitum* twice daily, during 60 days. Fishes were randomly distributed in experimental aquariums, 3 aquaria per treatment, in a closed circulation system, well aerated, with constant temperature. To compare the means of the variables was applied Tukey's ($P < 0.05$). No mortality was observed in any experimental group, except one fish of group FO. Significant differences were observed in hemoglobin, monocytes and in liver LPO and CAT activity. In the present study there is no difference in the red blood cells, hematocrit, mean corpuscular hemoglobin concentration and mean corpuscular volume between experimental groups. Fish from LO presented the lesser Hg concentration when compared to fish from group L+CO, while the other groups SO, CO, FO and L+FO presented similar hemoglobin concentration. There was no difference in white blood cells and in neutrophils, lymphocytes, eosinophils, basophils and thrombocytes for pacu. Fish fed with LO presented the higher values of monocytes and fish fed with L+FO presented the lesser value. The fish group FO and L+CO presented higher values of special granulocytic cell. Fish from group CO presented higher liver LPO production when compared to the other experimental groups. There was no difference in liver GST and CAT activity between any experimental groups. The present results show a possible influence of linseed oil as the main lipid source supply on the pacu hemoglobin concentration. There is also an induction of canola oil on liver LPO production. All tested dietary lipid sources can be used as an ingredients in feed for pacu for a period of 60 days without adversely affecting their health status.