

Dietary fish oil supplementation affects serum fatty acid concentrations in horses.

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Thirteen horses of Thoroughbred or Standardbred breeding were used to study the effect of dietary fish oil supplementation on blood lipid characteristics. Horses were assigned to either fish oil (n = 7) or corn oil (n = 6) treatment groups for 63 d. The fish oil contained 10.8% eicosapentaenoic acid (EPA) and 8% docosahexaenoic acid (DHA). Each horse received timothy hay and a mixed-grain concentrate at rates necessary to maintain BW. Oil (corn or fish) was top-dressed on the concentrate daily at a rate of 324 mg/kg of BW. The n-6:n-3 ratio was approximately 3.6:1 for horses receiving the corn oil diet and 1.4:1 for horses receiving the fish oil diet. Horses were exercised 5 d/wk during the study. Before supplementation, there was no difference in the concentrations of any serum fatty acids between the 2 treatment groups. The mean basal concentrations of EPA and DHA on d 0 were 0.04 and 0.01 mg/mL, respectively. After 63 d, horses receiving the fish oil treatment, but not those receiving the corn oil treatment, had increased concentrations of EPA and DHA (P <0.05). Fish oil supplementation for 63 d also increased the concentrations of C22:0, C22:1, and C22:5 fatty acids (P <0.05). Overall, horses receiving fish oil had a decreased concentration of n-6 fatty acids (P <0.05) and a greater concentration of n-3 fatty acids (P <0.01), resulting in a lower n-6:n-3 fatty acid ratio after 63 d (P <0.05). Serum cholesterol concentrations increased (P <0.05) during the supplementation period in horses receiving the corn oil but not in horses receiving the fish oil. Compared with horses receiving corn oil, horses receiving fish oil had lower serum triglycerides at d 63 (P <0.05). These results demonstrate that 63 d of fish oil supplementation at 324 mg/kg of BW was sufficient to alter the fatty acid profile and blood lipid properties of horses receiving regular exercise.