

Orotic Acid-Induced Fatty Liver in Mink: Characterization and Testing of Bioactive Peptides for Prevention and Treatment

Authors : Don Buddika Oshadi Malaweera, Lora Harris, Bruce Rathgeber, Chibuike C. Udenigwe, Kirsti Rouvinen-Watt

Abstract : Fatty liver disease is among the three most severe health concerns for mink and believed to occur through the same mechanism as nursing sickness. In North America, nursing sickness affects about 45% of mink farms and in Canada, approximately 50,000 mink females is affected annually. Orotic acid (OA) plays a critical role in lipid metabolism and can increase hepatic lipids by enhancing Sterol regulatory element binding protein-1c expression and decreasing Carnitine palmitoyl transferase I activity. This study was conducted to identify particular pathways and regulatory control points involved in fatty liver development, and evaluate the effectiveness of arginine and bioactive peptides for prevention and treatment of fatty liver disease in mink. A total of 45 mink were used in 9 treatments. The experimental diets consisted of 1% OA, 2% L-arginine and 5% of whey protein hydrolysates. At the end of 10 days of experimental period, the mink were anaesthetized, sampled for blood and euthanized, samples were obtained for histological, biochemical and molecular assays. The blood samples will be analyzed for clinical chemistry and triacylglycerol. The liver samples will be analyzed for total lipid content and analyzed for 6 genes of interest involved in adipogenic transformation, ER stress, and liver inflammation.

Keywords : fatty liver, L-arginine, mink, orotic acid, whey protein hydrolysates

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