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ABSTRACT

Aims: Fish by-products valorization on account of their richness in bioactive compounds may represent a better alternative to marine products with a view to economic profitability and sustainable development. In this study, we compared the effect of sardine by-product proteins (SBy-P), with those of the fillets (SF-P) or casein (Cas), on growth parameters, serum leptin level, lipids disorders, lipid peroxidation and reverse cholesterol transport, in diet-induced obese rats. *Main methods:* Obesity was induced by feeding rats a high-fat diet (20% sheep fat), during 12 weeks. At body weight (BW) of 400 ± 20 g, eighteen obese rats were divided into three homogenous groups and continue to consume the high-fat diet for 4 weeks containing either, 20% SBy-P, SF-P or Cas. *Key findings:* The results showed that SBy-P, compared to SF-P and Cas, efficiently reduced food intake (FI), BW gain and serum leptin level, and improved blood lipids levels and reverse cholesterol transport by reducing total cholesterol (TC), triacylglycerols (TG) and low-density lipoprotein cholesterol (LDL-HDL_1-C) serum levels, increasing the level of high-density lipoprotein cholesterol (HDL_2-C and