Webinar on
Animal and Veterinary Science
June 13, 2021

Ganoderma Lucidum Effects in an Animal Model of Obesity

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Obesity is a pandemic disease, and its evolution can be influenced by regular consumption of natural bioactive compounds. Mushrooms, such as *Ganoderma lucidum* (GL), include a wide variety of biomolecules with potential anti-obesity effects. This work aimed to study the influence of GL in an animal model of obesity. Forty-eight male mice (C57BL/6J) were divided into 5 groups: Group (G)-1-Western Control Diet; G-2-Western Diet 0.2% Cholesterol (WDC); G-3-WDC+0.7g/kg of GL; G-4-WDC+1.4g/kg of GL; G-5 WDC+2.8g/kg of GL. Water and food consumption were recorded weekly. Animals were weighed individually, and their temperature was measured on the back and abdomen (thermographic camera FLIRE6390). Thirteen weeks later, animals were sacrificed, and organs collected. A liver portion was used for histopathology analysis (ethical approval nº 8776). Chemical characterization of the GL extract was profiled by HPLC-DAD-ESI/MS. Ganoderic acid H and p-hydroxybenzoic acid were the main triterpenic and phenolic acids in the extract, respectively. Food and water consumption were no different among groups. All animals showed weight gain (11-16%): animals without GL supplementation showed the highest weight gain (G2 and G1, respectively); the groups with GL showed the lowest weight gain, which decreased as the mushroom concentration increased. Basal and final body temperatures remained constant. Liver weight was different among groups ($p<0.05$). Microvesicular (39/47; 83%) and macrovesicular fatty changes (steatosis) were the most frequent morphological changes in the liver. Hyperlipidemic diets consumption promoted weight gain and obesity. The higher weight gain in the groups not supplemented with *GL* suggested its anti-obesity properties. In this study, animals developed steatosis, which was not modified by *GL* supplementation. However, it should be noticed that the changes in lipid metabolism are reversible, and the differences observed in the liver relative weights, lower in the groups supplemented with *GL*, suggested an ongoing process of restoring to normal hepatocyte's phenotype.

Biography

Ana Faustino holds a Master in Veterinary Medicine and a European PhD in Veterinary Sciences. Animal models of cancer, tumoral angiogenesis and imaging are her main areas of interest. She has collaborating in several Financed Research projects. The results of her works were published in more than 250 publications in several formats. She received several prizes of scientific merit and press honours. She participated in several international and national meetings. She is editorial member of several scientific journals and reviewer of more than 300 manuscripts. She is Guest Editor of two special issues in Veterinary Animals and in Life.