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LEE INDEX VARIATION AND GLUCOSE CLEARANCE RATE IN AN ANIMAL MODEL OF OBESITY WITH ANIMALS SUPPLEMENTED WITH *GANODERMA LUCIDUM*

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The consumption of diets high in sugars and saturated fat are associated with obesity and other comorbidities, as well as glucose intolerance¹. Obesity can be influenced by the regular consumption of natural bioactive compounds like those found in *Ganoderma lucidum* mushroom (GL)². The main objective of this work is to determine body mass variations (Lee Index) and serum glucose levels in animals fed with diets supplemented with three concentrations of an hydroethanolic extract of GL. The fruiting bodies of GL were provided by Bioreishi- Agricultura Biologica, Lda. Forty-eight male mice (C57BL/6) were acquired and divided into 5 groups: G1-Western Diet 0.2% Cholesterol (WD); G2-Western Control (WC); G3-WD+0.7%g/kg of *G. lucidum*; G4-WD+1.4%g/kg of *G. lucidum*; G5- WD+2.8%g/kg of *G. lucidum*. At 7th and 13th weeks of study, the animals were measured (nasoanal distance in cm) in order to calculate the Lee Index (cubicle root of the weight (g)/the nasoanal length (cm) x 1000). Obesity was defined by a Lee index >310. Glucose intolerance test was performed on 4 animals in each group. The animals were fasted overnight and in the early morning, a 50% glucose solution (2g/kg) was injected intraperitoneally. Blood samples were collected one hour before glucose (time zero) administration and 30, 60 and 120 minutes later. Serum glucose was determined with the OGCare equipment. Glucose concentration values at time zero were considered control values. All ethical issues were followed (approval n° 8776). The chemical composition of the extract was profiled by HPLC-DAD-ESI/MS. All data were analyzed using the GraphPad Prism[®] for Windows software (version 7.0). Ganoderic acid H and *p*-hydroxybenzoic acid were the main triterpenic and phenolic acids found in the extract, respectively. In respect to the Lee index, the values show that all animals in the experimental groups became obese. In both weeks, G5 showed the highest values (353.45 ± 12.43 and 351.77 ± 12.24 respectively). At week 7, G1 and G2 differed statistically (p<0,05) from G5. Although G1 and G2 have the lowest Lee values in both weeks, they are the only ones that increase from week 7 to week 13, in contrast to the groups supplemented with GL. Regarding the glucose intolerance test, recorded glucose values at 30 minutes after the injection were increased in all groups, returning to normal values two hours later. At 13th week, the glucose values were increased in all groups in the 30 and 60 minutes after the intraperitoneal injection. At the end of two hours, the values decreased, but did not return to normal values in all the groups. Although animals in all experimental groups remained obese, animals supplemented with GL decreased their Lee Index. At 7th week the animals showed a normal glucose clearance, but in the last week of the study glucose values did not return to the values initially recorded after two hours, showing that the animals were not able to maintain the glucose clearance rate.

References

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