The decrease of histomorphometry and function of pancreas in male albino rats after induced by sleep deprivation

Title	The decrease of histomorphometry and function of pancreas in male albino rats after induced by sleep deprivation
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Abstract	Background: Sleep disturbance accelerates type 2 diabetes mellitus by reducing insulin secretion and by the occurrence of difficulty in controlling sleep behaviour in humans so that it is necessary conduct a study by using experimental animals.Objective: This study aims to determine histophotometric differences of pancreas and differences of glucose tolerance in male albino rats (Rattus norvegicus) after induced by stress paradoxical sleep deprivation (PSD) and total sleep deprivation (TSD). Methods: This study applied a post-test only with control groups consisting of 30 male albino rats (Wistar strain) divided randomly into 3 groups: control group, PSD group and TSD group. The mean number and diameter of islets of Langerhans were calculated per slide and were averaged for each group at a magnification of 400 X. The percentage of beta cells in one islet of Langerhans was (ÃƒÂƒÃ…Â¸-p) that was a number of normal beta cells (Bn) divided for the total beta cells (Bt) (normal and damaged) x 100%. The glucose level based on the sampling time was made a curve shape, and the area under the 0-to-120-minute curves (AUC0-120) was calculated by using a trapezoidal formula.Results: The lowest AUC0-120 level of glucose was the control group (14,082 ÃƒÂ‚Ã‚Â± 955mg/dL) and the highest was the TSD group (16,293 ÃƒÂ‚Ã‚Â± 2,195 mg/dL); the Post-Hoc LSD test showed a significant difference (p<0.05) between the control-PSD group and the TSD-control group. The mean result of pancreatic ÃƒÂƒÃ…Â¸ cells mass with the lowest number was in the TSD group (76.3 ÃƒÂ‚Ã‚Â± 4.8), and the highest result was in the control group (94.3 ÃƒÂ‚Ã‚Â± 2.7); Post-Hoc LSD showed a significant difference (p <0.05) in the control-PSD group and the TSD-control group. The lowest mean in cell diameter of islets of Langerhans was in the TSD group (0.132 ÃƒÂ‚Ã‚Â± 0.031 mm), and the highest mean was in the control group (0.213 ÃƒÂ‚Ã‚Â± 0.019 mm). Conclusion: Sleep deprivation could reduce pancreatic ÃƒÂƒÃ…Â¸ cell mass and cell diameter of islets of Langerhans and increase glucose tolerance levels.
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