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Impact of short term aerobic exercises on taste perception for sucrose in patients with type 2 diabetes mellitus

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Exercise, along with diet and medications plays an important role in the management of type 2 diabetes. Several long-term studies have demonstrated that regular exercise is beneficial in increasing insulin sensitivity in patients with type 2 diabetes mellitus. The sense of taste is an important oral chemical sense that plays a critical role in determining food preferences. The studies that have been conducted to determine the impact of exercise on taste perception is very limited. Thus, the aim of this study was to assess the impact of short-term aerobic exercise on taste perception for sucrose in type 2 diabetes mellitus patients. A sample of 140 type 2 diabetic patients, aged between 35-60 years was recruited for the study and randomly assigned into two groups, an exercise group performing aerobic exercises and a control group. A pre-tested questionnaire was used to obtain demographic data of all participants. A graded exercise protocol was introduced to the exercise group and they were instructed to perform regular exercises 4-5 days a week for 3 months without changing their regular diet and medications. Adherence to the protocol was assessed by giving regular telephone calls. Taste perception was assessed in both groups at 0 and 3 months. Preference for sucrose was assessed by the “Monell 2-series, Forced Choice Method” and supra-threshold intensity ratings for sucrose were tested using “general Labeled Magnitude Scale”. Data analysis was done by paired sample t-test and the significance was set at $p=0.05$ level. Participants in the exercise group showed increased supra-threshold intensity ratings for 04 out of 06 sucrose solutions, with the results being statistically significant for 02 of the higher concentrations i.e. 2.02 M (Difference in mean = 7.07 ± 4.03 , $p=0.032$) and 0.64 M (Difference in mean = 7.77 ± 4.79 , $p=0.038$) when compared to the controls. The preference for sucrose was significantly reduced (Difference in mean = 0.04 ± 0.02 , $p=0.031$) after 3 months in the exercise group. The supra-threshold intensity ratings in the control group did not show a statistically significant pattern while the preference for sucrose was increased (Difference in mean = 0.1 ± 1.04 , $p=0.479$). In conclusion, taste sensitivity for sucrose increases especially for higher concentrations and taste preference decreases in type 2 diabetes mellitus patients after 3 months of regular aerobic exercise.

Keywords: Exercises, taste perception, type 2 diabetes

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