



# The effect of Ellagic acid on sleep quality in patients with type 2 diabetes: a randomized double blind clinical trial

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## Abstract

**Background** Oxidative stress can reduce the quality of sleep in patients with type 2 diabetes. Antioxidants such as polyphenols may increase sleep quality by improving oxidative stress conditions.

**Objective** Considering the antioxidant properties of Ellagic acid (EA), this study was designed to evaluate the effect of EA on sleep quality in diabetic patients.

**Methods** In this study, 44 diabetic patients were recruited. Patients who met the inclusion criteria that were randomly allocated consumed a capsule containing 180 mg of EA per day ( $n = 22$ ) or placebo ( $n = 22$ ) for 8 weeks. Anthropometric factors, physical activity, food intake, and Petersburg's Sleep Quality (PSQI) questionnaire were assessed at the beginning and end of the study. Kolmogorov-Smirnov test, paired sample  $t$  test and independent sample  $t$  test were used to analyze the data.

**Results** At the end of the study, the mean scores of PSQI and sleep subgroups in the intervention group were significantly lower than in the placebo group ( $p < 0.05$ ). According to intragroup comparisons, these changes were significant in the intervention group at the end of the study compared to the beginning of the study ( $p < 0.05$ ) and were not significant in the placebo group ( $p > 0.05$ ).

**Conclusion** According to these findings, intake of EA may help to improve the sleep quality in patients with type 2 diabetes. These effects may be due to the antioxidant effects of this polyphenol.

**Keywords** Ellagic acid · Sleep quality · Stress oxidative · Type 2 diabetes

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## Abbreviations

AGEs Advanced glycation end products  
BMI Body mass index  
DM Diabetes mellitus  
EA Ellagic acid

FBS Fasting blood sugar  
GPx Glutathione peroxidase  
GSH Glutathione  
GSSG Oxidized glutathione  
HbA<sub>1c</sub> Hemoglobin A<sub>1c</sub>

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