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SI/CTR Abstract

Nighttime Melatonin Administration and Insulin Sensitivity

Albert McHugh BA, Cynthia Cheng MD, PhD*

Introduction: Previous studies have shown melatonin effects on insulin sensitivity, but with conflicting results. The inconsistency between these studies may be due to differences in melatonin dosage and subject age. Low melatonin dosages, generally <5 mg, have been used in prior research. We studied the effect of melatonin 9 mg for 6 weeks on insulin resistance, peripheral microvascular function, and sleep in non-diabetic, non-hypertensive middle-aged and geriatric patients.

Methods: Subjects with a history of hypertension or diabetes were excluded from the study. The geriatric cohort included 5 subjects 60-80 years old while the younger cohort was comprised of 14 subjects age 27-45 years old. Fifteen subjects were randomized to the melatonin treatment group and took 9 mg of controlled-release melatonin by mouth 30 minutes before bedtime for 6 weeks; the four subjects in the control did not receive any intervention. The Homeostatic Model Assessment (HOMA) and the Quantitative Insulin-Sensitivity Check Index (QUICKI) were used to assess insulin sensitivity.

Results: We observed a statistically significant increase in insulin sensitivity in the melatonin treatment group ($p=.008$) compared to the control group after HOMA analysis. Additionally, fasting insulin levels also improved within the melatonin treatment group. We did not see any significant changes in glucose levels after melatonin usage.

Discussion: The findings are limited by the small size of this pilot study. However, given these promising results, we are applying for funding to study a larger number of subjects to further examine age-related differences in insulin and glucose metabolism in response to melatonin usage.