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ROYAL JELLY ALLEVIATED FRAGMENTATION OF NON-RAPID EYE MOVEMENT SLEEP AND REINSTATED SLEEP STABILITY IN DIET-INDUCED OBESE MICE

A. Terao [1], C. Sugiura [1], M. Sato [1], S. Tanaka [1], N. Okumura [2]
[1] *Tokai University, Department of Biology- School of Biological Sciences, Sapporo, Japan;* [2] *Yamada Bee Company Inc., Institute for Bee Products and Health Science- R&D Department, Kagamino-cho, Japan*

Introduction: Obesity is a major public health issue prevalent in modern societies. Reducing food consumption and enhancing physical activity are rational strategies for changing the energy balance in favor of weight reduction. However, maintaining long-term interventions is challenging because of poor adherence to lifestyle changes. Royal jelly (RJ) is recognized due to its high nutritional value and potential health benefits. We previously reported that RJ supplementation decreased fat accumulation, resulting in weight loss and improvements in hyperglycemia and insulin resistance in high-fat diet (HFD)-induced obese mice. To expand the weight-reducing properties of RJ, this study aimed to investigate the effects of RJ supplementation on HFD-induced obese mice with impaired sleep stabilization.

Methods: Over a 20-week period, C57BL/6J mice were assigned to one of the following dietary groups: normal diet (ND), ND supplemented with 5% lyophilized RJ powder (ND + RJ), HFD, and HFD supplemented with 5% lyophilized RJ powder (HFD + RJ). Body weight and sleep architecture were examined in all mice after the study period. The mice were chronically implanted with electroencephalography (EEG) and electromyography (EMG) electrodes for the polysomnographic recording of their sleep/wakefulness states under isoflurane anesthesia. Vigilance states were classified automatically offline using the SleepSign ver. 3 program (Kissei Comtec, Nagano, Japan) based on the EEG, EMG, and spontaneous locomotor activity in every 10 seconds (1 epoch). The spectral quantification of the EEG recorded during NREM sleep was performed using a fast Fourier transform (sampled at 128 Hz) with a power spectral profile ranging from 0 to 20 Hz divided into 1-Hz resolutions.

Results: The body weight of HFD-fed mice increased by 50% compared to that of ND-fed mice. Compared to the HFD group, the HFD + RJ group exhibited a significant reduction in body weight through a decrease in fat mass. Additionally, similar to the ND group, the HFD + RJ group showed improvements in non-rapid eye movement (NREM) sleep fragmentation and wakefulness, facilitating the reestablishment of sleep/wake continuity and restoring overall sleep stability. In contrast, the ND + RJ and ND groups displayed a comparable sleep/wake architecture, indicating that RJ supplementation in the ND did not exert a substantial effect on sleep/wake patterns. The impact of RJ supplementation on cortical activity during NREM sleep was assessed via cortical EEG power spectra and delta power analyses. However, NREM sleep power spectral pattern across the four experimental groups were indistinguishable. Thus, neither HFD feeding, nor RJ supplementation influenced basal cortical activity.

Conclusions: Our results suggest that dietary RJ supplementation suppressed body fat accumulation and prevented HFD-induced NREM sleep fragmentation. Our findings suggest that dietary RJ enhances sleep/wake architecture and restores sleep stability, highlighting its potential as a dietary intervention for obesity management and sleep stabilization. Additional studies are needed to assess the beneficial effects of RJ on sleep architecture in humans
Conflict of interest:
Disclosure statement:
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FEATURES OF USING ARTIFICIAL INTELLIGENCE AS A COPING STRATEGY FOR UKRAINIAN UNIVERSITY STUDENTS

S. Hozak [1], O. Yelizarova [1], T. Stankevych [1], A. Parats [1], V. Chorna [2], N. Lebedynets [3], L. Tovkun [4]
[1] *State Institution «Marzieiev Institute for Public Health of the National Academy of Medical Sciences of Ukraine», Laboratory of Social Determinants of Population Health, Kyiv, Ukraine;* [2] *Medicine National Pirogov Memorial Medical University, Department of Disaster Medicine and Military Medicine, Vinnytsya, Ukraine;* [3] *Dragomanov Ukrainian State University, Department of Biology, Kyiv, Ukraine;* [4] *Hryhoriy Skovoroda University in Pereyaslav, Educational and methodical health diagnostics and disease prevention laboratory, Pereyaslav, Ukraine*

Introduction: In Ukraine, university students face ongoing stress and educational disruption due to wartime conditions. In response to these issues, tools have been developed to support mental health as part of the Mental Health and Psychosocial Support System. Information about these resources is widely shared within the university environment. These tools include mental health chatbots, academic assistance applications, and personalized learning platforms, all utilizing artificial intelligence (AI) technologies. It is essential to study the effectiveness of these tools from the users' perspective as psychological assistance continues to evolve. This study aims to assess the impact of AI technologies on student well-being. Method. Data was collected from April 18, 2025, to May 8, 2025. The survey was part of a broader project studying well-being during wartime. One key question addressed the effectiveness of AI-based tools in coping with stress. Respondents could choose: "Helped", "Not helped", " Undecided", "Didn't use". Participants (N=456; 69.3% female) from various Ukrainian universities completed the survey after informed consent. The majority were medical students (42.8%), followed by future teachers (25.7%) and psychologists (7.0%). Mental health was assessed using PHQ-9 and GAD-7 (cutoff: 10 points). Descriptive statistics, cross-tabulation, and ANOVA were conducted using R Studio. Results. Responses did not differ by gender (p>0.4). Overall, 56.6% (n=258) reported using AI, 34.2% (n=156) did not, and 9.2% (n=42) left the question blank while answering other sections. Among AI users, 39.5% (n=102) found it helpful, 41.1% (n=106) said it was not, and 19.4% (n=50) were undecided. No significant differences were found by specialty (p>0.5) or age (p>0.3). Anxiety and depression scores were significantly higher in females (p<0.001), with no link to specialty (p>0.1). Depressive symptoms were present in 39.6% of females and 21.4% of males; anxiety symptoms were found in 27.2% of females and 7.9% of males.PHQ-9 scores ranged from 8.1 (SD=6.1) to 10.1 (SD=5.6) with no significant differences by AI use (F=1.0; p=0.408). GAD-7 scores varied significantly (F=2.9; p=0.021): Helped by AI: 7.3 (SD=2.1); Not helped: 7.9 (SD=5.0); Undecided: 7.8 (SD=4.7); Didn't use AI: 6.1 (SD=4.3). Participants who skipped the AI question in the questionnaire scored an average of 7.6 (SD=4.8) points. Conclusions. AI tools are commonly used as coping aids, but their perceived effectiveness is mixed. Students who used AI did not report better mental health than those who did not. The highest anxiety scores were found among students who avoided answering the AI question despite completing the rest of the survey. This group may represent a vulnerable subgroup that avoids digital mental health tools due to stigmatization, distrust, or privacy concerns. These findings suggest that AI use may reflect need rather than effectiveness and highlight the importance of addressing stigma in mental health support. Further research is needed to explore these issues.
No conflict of interest

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RADIOMICS-BASED ANALYSIS OF EMOTIONAL CONFLICT FMRI FOR PREDICTING SERTRALINE RESPONSE IN MAJOR DEPRESSIVE DISORDER

M. Chen [1,2], H.G. Ruhé [3,4], H.A. Marquering [1,2], L. Reneman [2], M.W.A. Caan [1]
[1] *Amsterdam UMC, Biomedical Engineering and Physics, Amsterdam, Netherlands;* [2] *Amsterdam UMC, Radiology and Nuclear Medicine, Amsterdam, Netherlands;* [3] *Radboudumc, Department of Psychiatry, Nijmegen, Netherlands;* [4] *Radboud University, Donders Institute for Brain- Cognition- and Behavior, Nijmegen, Netherlands*

Background: Major depressive disorder (MDD) is frequently treated with sertraline, a selective serotonin reuptake inhibitor (SSRI). However, only about half of patients respond to first-line SSRI treatment [1], and currently, no validated biomarkers reliably predict treatment outcomes. Functional MRI (fMRI) during emotional conflict processing has been used to predict treatment response [2]. Yet, traditional approaches to fMRI analysis rely on regional mean activation, overlooking other factors such as spatial heterogeneity in brain function. Radiomics, a high-dimensional analysis technique, offers a novel approach to quantifying complex spatial patterns in neuroimaging data [3].

Objective: This study aimed to compare traditional average BOLD signals and radiomics-based models for predicting sertraline versus placebo response during emotional conflict processing in MDD.

Methods: We analysed fMRI data from patients with MDD enrolled in the