The Effect of Rapamycin Paired with Traumatic Memory Activation on Cognitive Performance in Veterans Diagnosed with PTSD

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Many individuals with posttraumatic stress disorder (PTSD) experience cognitive impairment in addition to the characteristic psychological symptoms. Animal studies have shown that rapamycin, a protein synthesis inhibitor that targets the protein kinase mTOR, can prevent the reconsolidation of a reactivated fear memory, thereby reducing its emotional strength at a neurochemical level. The aim of the current study was to determine if pairing rapamycin with traumatic memory reactivation in male veterans with combat-related PTSD would lead to an improvement in cognitive performance, based on scores from the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) at baseline and 1-month follow-up. In a double-blind, placebo-controlled study, male veterans with combat-related PTSD were administered either a single dose of rapamycin or placebo, followed by a script-driven memory reactivation task. Measures included the RBANS, Clinician Administered PTSD Scale (CAPS), and the Quick Inventory of Depressive Symptomatology (QIDS). A repeated measures ANOVA was conducted to assess the impact of two different interventions (rapamycin, placebo) on participantsÕ scores on the RBANS, across two time periods (baseline, one-month follow-up). The main effect comparing the two type of interventions revealed no significant differences in the effectiveness of the two interventions in the entire sample; F (1,48) = .01, p = .921, partial eta squared < .001. When the sample was limited to participants who demonstrated a clinically significant reduction (³ 20 points) in their CAPS score, a repeated measures ANOVA revealed a significant interaction between time and treatment intervention; Wilks Lambda = .44, F (1, 13) = 16.74, p = .001, partial eta squared = .563. Pairwise comparisons showed a significant improvement between baseline and one-month follow-up on the RBANS for participants in the placebo group, mean difference = 10.00, p = .002. Based on these results, a single rapamycin treatment does not appear to be detrimental or beneficial to cognitive performance. Furthermore, a clinically significant reduction in PTSD symptoms due to rapamycin is not associated with an improvement in cognitive performance.