The effects of tyrosine on cognitive performance during extended wakefulness

Neri DF, Wiegmann D, Stanny RR, Shappell SA, McCardie A, McKay DL. Aviat. Space Environ. Med. 1995; 66(4): 313-319.

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DOI: unavailable

PMID: 7794222

Tyrosine, a large neutral amino acid found in dietary proteins, has received recent attention as a potential treatment for stress. The behavioral effects of tyrosine were examined during an episode of continuous nighttime work involving one night's sleep loss. Subjects performed nine iterations of a battery of performance tasks and mood scales for approximately 13 h, beginning at 1930 and ending at 0820. They remained awake throughout the day on which the experiment began and were awake for more than 24 h by the end of testing. Six hours after the experiment began, one-half of the subjects received 150 mg.kg-1 tyrosine in a split dose while the other half received cornstarch placebo in a double-blind procedure. Tyrosine administration was associated with a significant amelioration of the usual performance decline on a psychomotor task and a significant reduction in lapse probability on a high-event-rate vigilance task. The improvements lasted on the order of 3 h. The results of this study also suggest that tyrosine is a relatively benign treatment at this dose. After further testing with other doses and timing of administration, tyrosine may prove useful in counteracting performance decrements during episodes of sustained work coupled with sleep loss.

Language: en