

Abstract

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Effects of intravenously administered vitamin B12 on sleep in the rat.

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BACKGROUND: Vitamin B12 (VB12) has been reported to normalize the entrainment of circadian rhythms in the non-24-h sleep wake cycle and delayed sleep phase insomnia in humans.

OBJECTIVE: The purpose of this work was to clarify whether the peripheral administration of VB12 has any sleep-promoting effect on the sleep-wake rhythm in freely moving rats.

METHODS: After a baseline day of saline infusion. VB12 (500 micrograms/kg/day) was administered continuously for 4 days via the jugular vein. Polysomnographic recordings were carried out concurrently.

RESULTS: In both the light and the 24-h periods, the amount of non-rapid eye movement (NREM) sleep increased significantly on VB12-days 2 and 3, while the amount of REM sleep increased significantly on VB12-day 2. In the light period, the increase in NREM sleep was due to increased duration of the episode, while the tendency to an increase in REM sleep was due to an increased number of episodes. Changes in the diurnal sleep-wake rhythm tended to appear in the earlier light period. The serum VB12 concentrations in the VB12 group were 40 times higher than in controls.

CONCLUSIONS: These findings suggest that peripherally infused VB12 has promoting effects on the rat's sleep, especially in the light period.

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