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Centella asiatica reverses age-related sleep deficits in an aged mouse model

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Abstract

Age related sleep disruption and fragmentation are common in elderly populations and the amount of time spent in rapid eye movement (REM) sleep naturally declines with age. REM sleep is important for memory consolidation and this decline in REM may underlie aging-related cognitive decline. Many clinical conditions related to aging are the result of oxidative stress, and enhancing REM sleep has been found to have antioxidant effects. The application of extracts from the plant *Centella asiatica* reverses the effects of oxidative stress in rat, fruit fly, and sleep-deprived mouse models, however, little is known about how this substance affects sleep patterns in aged mice.

Here, we administered *C. asiatica* in a water extract incorporated into chow (1000mg/kg) or control chow to C57BL6 mice aged 3 and 18 months for two weeks, before effects on sleep composition were determined using electrodes that recorded EEG and EMG signals, and anxiety-like behaviors were assessed using a light-dark box test.

We report that aged control mice exhibited significant differences in sleep composition compared to their younger counterparts and a reversal of these changes was observed in aged mice fed *C. asiatica* dosed chow. The REM sleep architecture of aged mice dosed with *C. asiatica* more closely resembled that of young mice including increased REM sleep percentage, REM bout duration, and number of transitions into REM sleep. There were no significant differences in anxiety behaviors between aged mice given *C. asiatica* dosed chow versus control chow, which may indicate this extract's rejuvenative properties are not due to an anxiolytic effect. The ability of *C. asiatica* to improve REM sleep in aged mice makes it a promising treatment to promote healthy aging in the elderly.