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Effects of kava-kava extract on the sleep-wake cycle in sleep-disturbed rats

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Abstract

Rationale: Kava-kava extract may be useful as an herbal medicine for treatment of insomnia and anxiety.

Objectives: The present study was undertaken to investigate the effects of kava-kava extract on the sleep-wake cycle in comparison with that of flunitrazepam using sleep-disturbed rats.

Methods: Electrodes for measurement of electroencephalogram (EEG) and electromyogram (EMG) were implanted into the frontal cortex and the dorsal neck muscle of rats. EEG and EMG were recorded with an electroencephalogram. SleepSign ver.2.0 was used for EEG and EMG analysis. Total times of wakefulness, non-rapid eye movement (non-REM) and REM sleep were measured from 09:00 to 15:00.

Results: A significant shortening of the sleep latency in sleep-disturbed rats was observed following the administration of kava-kava extract at a dose of 300 mg/kg, while no effects were observed on the total

waking and non-REM sleep time. On the other hand, flunitrazepam showed a significant shortening in sleep latency, decrease in total waking time and increase in total non-REM sleep time. Although the effects of flunitrazepam were antagonized by the benzodiazepine receptor antagonist flumazenil, the effect of kava-kava extract was not antagonized by flumazenil. Kava-kava extract showed a significant increase in delta activity during non-REM sleep in sleep-disturbed rats, whereas a significant decrease in delta power during non-REM sleep was observed with flunitrazepam. Flumazenil caused no significant effect on the changes in delta activity induced by both kava-kava extract and flunitrazepam.

Conclusions: Kava-kava extract is an herbal medicine having not only hypnotic effects, but also sleep quality-enhancement effects.

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