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LETTER TO EDITOR

# Sleep parameters in rhesus monkeys by using actigraphy

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Dear Editor;

Andersen et al. (2013) reported the effect of methamphetamine on sleep parameters in rhesus monkeys by using actigraphy, named Actiwatch®. They quoted some references (Mann et al. 2005; Andersen et al. 2010; Andersen et al. 2012) to establish the validity of their study. Sleep efficiency, sleep latency, and sleep fragmentation were selected as sleep parameters, which were calculated by using Actiware software program. As a conclusion, methamphetamine (0.03 mg/kg) disrupted sleep by producing an increase in sleep latency and sleep fragmentation, in combination with a decrease in sleep efficiency. After concluding the drug experiment, the effect disappeared.

I have two concerns on their study. First, actigraphy cannot become a substitute for sleep polysomnography. Actigraphy is based on an accelerometer for movement, and it does not directly reflect brain activity. They quoted one validation study with Actiwatch® (Terrill et al. 2010), but Terrill et al. mentioned that the sensitivity of detecting wakefulness during time in bed was poor. There is a cutoff value of Actiwatch® sensitivity for arriving at sleep/wake differentiation, which is initially set at 40 counts per minute. This value was originally determined for human subjects, and the cutoff value should be set according to each test situation.

Second, they prepared two concentrations of methamphetamine and the effect of methamphetamine treatment was evaluated. As an additional analysis, they calculated correlation coefficients between the intake of methamphetamine and three sleep parameters. Although statistical significance was observed in each relationship, the explanation rates were 0.27 or smaller. As the authors mentioned, further studies are needed to confirm the relationship.

I agree with the simplicity of actigraphy to monitor sleep, but much more trials are needed to establish validation for the application of actigraphy to small nonhuman primates. Activity monitoring and sleep monitoring are different concepts, and special caution should be paid when inferring sleep based on actigraphy (Terrill et al. 2010).

**Conflict of interest** None declared.

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