

# Type of anesthetic will improve sleeping medication, probe mysteries of the snooze

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Researchers at the University of Alberta have discovered sleep patterns in a type of anesthesia that are the closest ever to a natural, non-groggy snooze.

The anesthetic used in the study, known as ethyl carbamate or urethane, provides researchers with a tool to more thoroughly investigate ways of treating sleep disorders and improving existing sleep medications, says Clayton Dickson, one of the study's co-authors and an associate professor of psychology, physiology and neuroscience at the University of Alberta in Canada.

“Most general anesthetics used for surgery and available medications used to treat sleeplessness promote what is called slow-wave sleep at the expense of the other main stage of sleep known as rapid eye movement or REM sleep so people tend to wake up groggy,” Dickson said. “Our findings suggest that this type of anesthesia can induce the full spectrum of the stages you would see during natural sleep,” which will allow researchers to fine-tune sleep medications and anesthetics, benefiting patients.

By comparing the brainwaves of rats under the anesthetic to those occurring with natural sleep, researchers discovered cyclic changes of brain states that were almost identical to those seen during the natural sleep cycle. Changes in muscle tone, respiration rates and heartbeat were also similar.

Though the ethyl carbamate is not suitable for use in human consumption because of the high chemical dosage required, the research findings can be used by neuroscientists, physiologists and others in the field to unravel the mysteries of sleep, Dickson says. The long-term implications for this discovery, he says, will benefit researchers by allowing them to study sleep pattern anomalies, including the puzzling paradox of why brain activity is similar in wakefulness as it is during REM sleep, despite a complete lack of awareness and responsiveness.

Source: University of Alberta

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