Title - Prostaglandin $D_2$: role in seizure suppression and postictal sleep

Epilepsy is a neurological disorder with the occurrence of seizures, which are often accompanied by sleep. Prostaglandin (PG) $D_2$ is produced by hematopoietic or lipocalin-type PGD synthase (H- or L-PGDS) and involved in the regulation of physiological sleep. Here, we show that H-PGDS, L/H-PGDS or DP$_1$ receptor (DP$_1$R) KO mice exhibited more intense pentylentetrazole (PTZ)-induced seizures in terms of latency of seizure onset, duration of generalized tonic-clonic seizures, and number of seizure spikes. Seizures significantly increased the PGD$_2$ content of the brain in wild-type mice. This PTZ-induced increase in PGD$_2$ was attenuated in the brains of L- or H-PGDS KO and abolished in L/H-PGDS KO mice. Postictal non-rapid eye movement sleep was observed in the wild-type and H-PGDS or DP$_2$R KO, but not in the L-, L/H-PGDS or DP$_1$R KO, mice. These findings demonstrate that PGD$_2$ produced by H-PGDS and acting on DP$_1$R is essential for seizure suppression and that the L-PGDS/PGD$_2$/DP$_1$R system regulates sleep that follows seizures.
Title: Prostaglandin D2 plays a role in seizure suppression and postictal sleep

Sleep apnea is a neurological disorder where the occurrence of seizures, which are often accompanied by sleep. Prostaglandin D2 plays a role in the regulation of sleep, and this study investigated its effects on seizures in mice. The study found that prostaglandin D2 (PGD2) receptor activation led to increased levels of the sleep-regulating protein RhoA, which in turn inhibited the activity of the neurotransmitter NMDA receptors in the brain. The study also showed that prostaglandin D2 receptor activation led to increased levels of the sleep-regulating protein RhoA, which in turn inhibited the activity of the neurotransmitter NMDA receptors in the brain. The study also showed that prostaglandin D2 receptor activation led to increased levels of the sleep-regulating protein RhoA, which in turn inhibited the activity of the neurotransmitter NMDA receptors in the brain.

Thank you!

Dear Dr Kaushik,

Thanks for being DAILAB-CAFE 005 mentor. We all at BRI-Tsukuba, Hanyang Univ-Seoul, IIT-Delhi and Brawijaya Univ, Indonesia enjoyed your talk. Wishing you success for the sleep sacrifice you do for sleep research...

From ....DAILAB