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Sedative–Hypnotic Activity of Water Extracts of Coptidis Rhizoma in Rodents

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Many medicinal plants have been used in Asia for treating a variety of mental diseases, including insomnia and depression. However, their sedative–hypnotic effects and mechanisms have not been clarified yet. Accordingly, the objective of this study was to investigate the sedative–hypnotic effects of water extracts of five medicinal plants: Coptidis Rhizoma, Lycii Fructus, Angelicae sinensis Radix, Bupleuri Radix, and Polygonum multiflorum Thunberg. The binding abilities of five medicinal plant extracts to the GABAA–BZD and 5-HT2C receptors were compared. Their abilities to activate arylalkylamine N-acetyltransferase (AANAT), a melatonin synthesis enzyme, in pineal cells were also determined. Following in vitro tests, the sedative and hypnotic activities of extracts with the highest activities were determined in an animal sleep model. In the binding assay, the water extracts of Coptidis Rhizoma (WCR) showed high binding affinity to the GABAA–BZD and 5-HT2C receptors in a dose-dependent manner. Additionally, WCR increased the AANAT activity up to five times compared with the baseline level. Further animal sleep model exriments showed that WCR potentiated pentobarbital-induced sleep by prolonging the sleep time. It also decreased the sleep onset time in mice. In addition, WCR reduced wake time and increased non-rapid eye movement (NREM) sleep without EEG power density during NREM sleep in rats. WCR could effectively induce NREM sleep without altering the architectural physiologic profile of sleep. This is the first report of the sedative–hypnotic effect of Coptidis Rhizoma possibly by regulating GABAA and 5-HT2C receptors and by activating AANAT activity.

Biography

Insop Shim currently working as Professor in the Department of Physiology at Kyung Hee University, South Korea. Insop Shim received Ph.D., degree in Behavioral Neuroscience from University of Illinois, USA and completed post-doctoral fellowship in the Department of Psychiatry, School of Medicine University of Illinois, U.S.A. Insop Shim,the member of the Society for Neuroscience and has served as an organizing committee of many International conferences. Insop Shim have served as the Editor-in-Chief of Korean Society of Stress Medicine, Executive Editor of Experimental Neurobiology, and section editor of BMC-Complementary medicine and therapies. Insop Shim have published more than 220 publications. Insop Shim research interests include functional neuroanatomy, neural mechanisms responsible for motivational behaviors including stress, drugs of abuse, learning and memory and Development of new drugs for neurodegenerative disease like Parkinson's, Alzheimer's disease, Ischemia.

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