

P53

Inhibitory Effects of Fragrance Inhalation of *Acorus gramineus* on the PTZ-Induced Convulsion in Mice

Byung-Su Gu, Dong-Ung Lee*

Department of Oriental Neuropsychiatry, College of Oriental Medicine,
Dongguk University, Seoul, Korea

*Department of Biochemistry, Dongguk University, Kyongju 780-714, Korea

This study was carried out to investigate the inhibitory effects of the essential oil and fragrance inhalation of *Acorus gramineus*(石菖蒲), a sedative drug in Korean folk medicine, on the PTZ-induced convulsion in mice. For this purpose, GABA transaminase(GABA-T) activity, brain GABA level, brain glutamate level and anticonvulsive effect have been measured *in vivo*. Furthermore, antioxidative activities and benzodiazepine receptor agonistic effect have been determined *in vitro* or *in vivo*. The results were summerized as follows :

1. Essential oil fragrance inhibited significantly the activity of GABA-T in a time-dependent manner. However, the difference of effects in 7 days- and 14 days-treated group was small, moreover, 30 days-treated group did not strongly increase the effect in proportion to the inhalation duration.
2. Essential oil fragrance increased effectively the brain GABA level and decreased the glutamate content. These effects, however, were not proportionally enhanced in 30 days-treated group.
3. Essential oil inhibited activities of xanthine oxidase and aldehyde oxidase, which are free radical generating enzymes *in vitro*, but in the high concentration of essential oil its effect did not increase proportionally.
4. Essential oil reduced strongly the formation of lipid peroxides, which

causes cell damages, in a dose-dependent manner *in vitro* and also inhibited lipid peroxidation *in vivo* assay compared to the control group.

5. The DPPH radical scavenging effect of essential oil was increased dose-dependently, though its activity was weak.

6. Essential oil showed agonistic activity to the GABA_A/benzodiazepine receptor in a dose-dependent manner, however, did not inhibit the binding of an antagonist completely.

7. Essential oil lengthened the onset time of convulsion and shortened the convulsion duration in a time-dependent manner.

Above results suggest that the essential oil fragrance exhibits anticonvulsive effect on PTZ-treated mice, so this fragrance may be useful for the treatment or prevention of convulsion.