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Screening of Traditional Herbal Medicines and Mushroom
to Develop New Materials for Neurotrophic Factor
– *Gardenia jasminoides* Ellis & *Tremella fuciformis* –

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With human life span increasing and with decreasing cognitive function in elderly individuals with Alzheimer's disease (AD) related dementia, AD has become a major health problem in society. The AD patients transcend beyond 4 million in USA already and the mortality rate from AD is 4th. The patients are expected to increase by 15 million in the next ten years. In the case of Korea, as senior population have been grown they account for 7 percent of all population. So the increment of AD is grown up accordingly. As growing the seriousness of AD, there are many efforts to find compound which has effect of prevention or treatment of AD all over the world. Through this effort, Nerve growth factor (NGF) was elucidated that it was the one of product to have effect of treatment of AD. Nerve growth factor (NGF) is an essential protein for supporting the growth and maintenance of peripheral sympathetic neurons as well as facilitating the development of some sensory neurons for a brief period during early development. It reported that NGF might be useful the treatment of AD. However, current clinical trials with NGF have caused a number of problems such as delivery, short half-lives, poor penetration through the blood brain barrier. So new compounds with neurotrophic activity that have potential for treating such nervous diseases need to be developed. In the present study, we investigated the neurotrophic effect of *Gardenia jasminoides* Ellis and *Tremella fuciformis* to develop new functional material. *Gardenia jasminoides* Ellis was used as natural pigment in Korea and its pharmacological actions such as protective activity against oxidative damage, cytotoxic effect, antiinflammatory activity have already been elucidated. And several pharmacological activities of *Tremella fuciformis* such as enhancing cellular and humoral immune functions, anti-tumor, hypoglycemic were also investigated. Although many studies like above about two natural products had been done, there were not trial to apply these on as dietary supplement. In vitro, the neurotrophic effect was evaluated by microscopically monitoring their potency to induce neurite outgrowth in PC12h cells. In vivo, the cognitive improving and cerebral protective effects was investigated using by the scopolamine-induced (2mg/kg, S.C.) amnesic rats were also evaluated using the Morris water maze take and choline acetyltransferase (ChAT) immunohistochemistry. *Gardenia jasminoides* Ellis and *Tremella fuciformis* promoted neurite outgrowth in PC12h cells and improved learning and memory ability on scopolamine-induced amnesic animals compared with control group significantly. Through the this study we could confirm that *Gardenia jasminoides* Ellis and *Tremella fuciformis* had a potential for improvement of perceptive ability and preservation of dementia. And we could also show the developmental possibility of dietary supplement for neurotrophic factor.

Key words: *Gardenia jasminoides* Ellis, *Tremella fuciformis*, neurotrophic factor(NF), Alzheimer's disease (AD), PC12h cells