Using Lotus (Nelumbo nucifera) Infusions to Ameliorate Symptoms of Neurodegenerative Diseases

Ma, Iok Kei (School: Pui Ching Middle School)
Cheung, Shannon (School: Pui Ching Middle School)
Chan, Ngai Long (School: Pui Ching Middle School)

In the 21st century, the mean lifespan has risen to never-before-seen highs. As neurodegenerative diseases are more prevalent among elders, they have become a major threat to humankind, and oxidative stress (surplus of free radicals in the body) has been associated with several neurodegenerative diseases such as Parkinson's disease. Moreover, 50% of patients with neurodegenerative diseases report suffering insomnia. Lotus contains a variety of antioxidants and has long been used as a natural product for multiple reasons such as insomnia, but lacks evidence that it is an effective remedy for insomnia, depression and neurodegenerative diseases. Therefore, we seek to discover if neurodegenerative diseases and insomnia can be ameliorated by lotus extracts. In vitro and in vivo assays were used. In vitro assays include DPPH free radical scavenging assay, while in vivo assays include MDA lipid peroxidation, superoxide dismutase level, negative geotaxis, survival assays. Sleep activity is monitored using DAM. Within negative geotaxis assays, control and treatment groups in both genders had approximately equal results. Furthermore, female treatment groups significantly slept more than control groups over a 48-hour period. Lastly, MDA levels in treatment groups were lower than model groups in both genders. This study showed that lotus extracts are promising in reducing oxidative stress. Increased sleep time in female flies after treatment suggested that lotus extracts effectively reduce symptoms of insomnia. Further experiments compare effectiveness of lotus extracts in both genders to clarify the relationship between sex and drug efficacy. GC-MS will be used to screen out effective compounds.

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