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Potential Nephrotoxicity of Ganoderma Lucidum

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Objectives: In Korea, as the prevalence of chronic illness and degenerative diseases increases, interest in various health supplements is higher than in any other country. Ganoderma lucidum (GL), the Reishi, is one of the popular herbs in Asian countries for potential of anti-oxidative, anti-inflammatory, and anti-tumor growth effect. However, the potential nephrotoxicity of GL decoction water has not been evaluated through animal experiments until now.

Methods: To evaluate the nephrotoxic effect of GL decoction water, we randomly divided 7-weeks-old female mice into four groups, which consisted of control group and GL groups (2-week, 4-week, and 6-week groups).

Results: There were no significant differences in serum blood urea nitrogen, serum creatinine, and urine protein/creatinine ratio between the groups. In histological findings, intermittent glomerular hypertrophy was observed and increased inflammatory response and fibrosis were observed around it in the 2-week model. In 6-week model, more frequent fibrosis was observed, and rather less fibrosis was shown in 4-week model. Proinflammatory cytokine (IL-6) mRNA expression did not show a significant difference between groups, but TNF-α increased rapidly as the administration period increased, and there was a significant difference between subjects. As with the histological findings, Bcl-2, αSMA, and collagen IV mRNA expression showed the most significant increases in 2- and 6–week models, showing correlation with histological findings. As from the 2-week to 6-week model, the expression of NOX-1 increased and the antioxidant GPX-1 showed a tendency to gradually decrease.

Conclusions: The GL decoction water did not cause significant renal dysfunction in clinical aspects, but was associated with mild to moderate renal histologic changes and elevations of various markers for oxidative stress, inflammation and fibrosis in *in vivo* experiments.