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Oxalate nephropathy Induced by High-Dose Chaga Mushroom Consumption: Experimental Evidence in a Rat Model

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Objectives : Oxalate induced kidney injury can be caused not only by overproduction of endogenous oxalate but also by excessive dietary oxalate consumption. This study investigated whether Chaga mushroom, which contains oxalate, causes kidney injury.
Methods : Wistar rats were divided into three groups based on previously reported case. Standard-dose (SD) group rats fed Chaga mushroom powder 1281.6 mg/kg body weight (as oxalate 183 mg/kg body weight) and High-dose (HD) group rats fed Chaga mushroom powder 3844.8 mg/kg body weight (as oxalate 549 mg/kg body weight); for comparison, control group rats fed without any additions. We investigated chronic kidney injury in terms of renal function, histopathology, oxidative stress and apoptosis with immunohistochemistry and immunoblot assay.
Results : In terms of basic parameters, final body weight of HD group was statistically significantly lower than other groups (P=0.011), and daily urinary protein excretion of HD group was statistically significantly higher than other groups (P = 0.001). In histopathologic findings, the deposition of oxalate crystal and tubular injury were observed only in HD group. In terms of oxidative stress markers, 8-OHdG levels of serum, urine and kidney tissue from HD group were statistically significantly higher than other groups (P<0.05). ED-1 of HD group was significantly increased compared to other groups (P<0.05). In terms of apoptosis, TUNEL and Bax positive cells of HD group were higher than other groups (P<0.05), whereas Bcl positive cells of HD group were lower than other groups (P<0.05).
Conclusions : High-dose consumption of Chaga mushrooms may induce kidney damage due to the high content of oxalate.

figure 1.png.PNG

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Beyond Challenges, Towards Healthier Kidney

Figure 1. Representative photomicrographs from the pathological examination

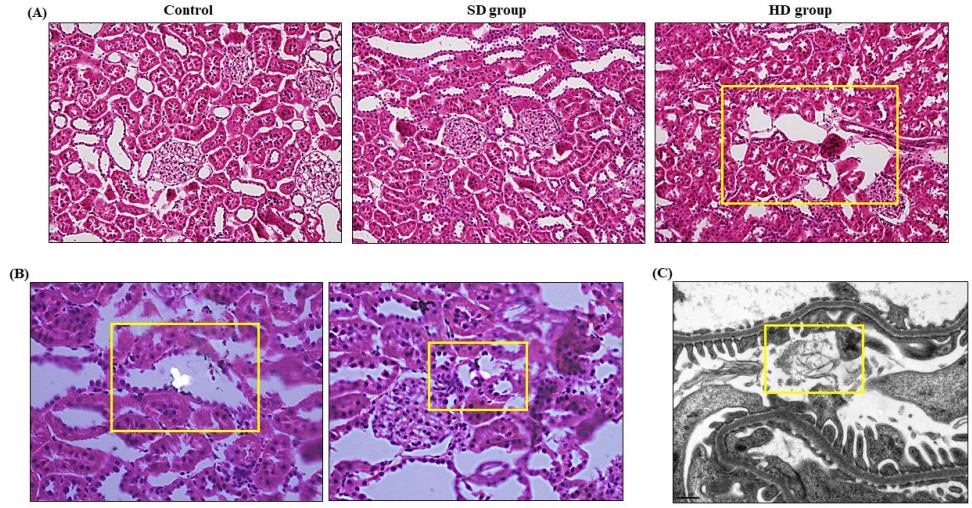

figure 1.png.PNG

Figure 2. Comparison in 8-OHdG of kidney tissues, serum and urine between control and experimental groups