



## Protective Effect of Lily Polysaccharide Against Alloxan-Induced Pancreatic $\beta$ -Cell Damage

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**SUMMARY.** The protective effect of two Lily (*Lilium brownii*) polysaccharides (LP1 and LP2) on alloxan-induced pancreatic  $\beta$ -cell damage was investigated by using insulin-secreting (HIT-T15) cells. Results showed that alloxan treatment induced  $\beta$ -cell damage, as indicated by a decrease in cell viability, increases in reactive oxygen species (ROS), cytosolic free  $\text{Ca}^{2+}$  levels, and low sensitivity to the glucose-stimulated insulin release. Interestingly, pretreatment with LP1 or LP2 significantly reversed these effects in alloxan-treated HIT-T15 cells. Pretreatment of cells with LP1 or LP2 increased cell viability, likely through the suppression of alloxan-induced increase in ROS production and cytosolic free  $\text{Ca}^{2+}$  levels. Moreover, LP1 and LP2 pretreatment also restored the intracellular ATP levels and increased the sensitivity of the cells to glucose-stimulated insulin release. Collectively, these results demonstrate that LP1 and LP2 can prevent alloxan-induced pancreatic  $\beta$ -cell damage. Our data suggest that LP1 and LP2 may have utility in therapeutics for prevention of diabetes mellitus.

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**KEY WORDS:** Alloxan, Diabetes mellitus, HIT-T15 cells, Lily polysaccharide, Reactive oxygen species.

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