

Protective Effect of a Lipid Transfer Protein Isolated from Noni Seeds on Cerulein-Induced Acute Pancreatitis

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Introduction: *Morinda citrifolia* L. (Noni) has been reported to have a broad range of therapeutic effects, such as prevention or treatment of inflammatory diseases. Recently, our research group reported the isolation and characterization of a lipid transfer protein (McLTP₁ – 9.4 kDa) from noni seeds exhibiting antinociceptive and anti-inflammatory activities. **Objectives:** This study aimed to determine whether McLTP₁ has a protective effect on cerulein-induced acute pancreatitis (AP) in mice. **Material and Methods:** McLTP₁ was purified from noni seeds as previously described and was administered to male Swiss mice (25 - 30 g) by oral or intraperitoneal route (n=6 in each group). Acute pancreatitis was induced by 6 hourly intraperitoneal injections of cerulein (50 µg/kg). Control mice received NaCl 0.15 M v.o. In a separate group, McLTP₁ (8 mg/kg) was given at 30 min (i.p.) and 1 hour (p.o.) before the AP induction. Blood samples were harvested for analysis of amylase and lipase serum levels, ELISAs for TNF-α, IL-1β, and IL-6 and MPO activity. The mice were euthanized at 1 hour after completion of AP induction and the pancreas removed for morphological examination and determination of pancreatic weight/body weight ratio (PW/BW ratio). **Results and Discussion:** Cerulein significantly increased the amylase and lipase levels by 96.14% and 93.56%, respectively (p<0.05 Tukey's test). However, McLTP₁ reduced the levels of lipase by 38.46% (i.p.) and 41.53% (v.o.) and amylase by 25.33% (i.p.) and 46.66% (v.o.) significantly (p<0.05). AP caused pancreatic weight gain due to edema, resulting in an increased PW/BW ratio. Differently, McLTP₁ reduced the pancreatic edema by 13% (i.p.) and 28% (p.o.). Also, McLTP₁ reduced the production of pro-inflammatory cytokines TNF-α, IL-1β, IL-6 and the levels of MPO activity significantly. **Conclusion:** McLTP₁ attenuates the severity of AP by inhibiting tissue injury, digestive enzyme production, and pro-inflammatory cytokine production.

Keywords: *Morinda citrifolia* L.; Lipid Transfer Protein; Acute Pancreatitis; Anti-inflammatory activity.

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