

Methanolic extract of *Smilax perfoliata* Lour. ameliorates L-arginine-induced acute pancreatitis through modulation of oxidative stress and inflammatory mediators

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Received 07 May 2024; revised 15 September 2024

Acute pancreatitis (AP) is a severe, potentially life threatening inflammation of the pancreas with no clinically approved therapeutic intervention. Oxidative stress and inflammation are key drivers of the disease, contributing to pancreatic damage and worsening its progression. This study was designed to evaluate both the *in vitro* and *in vivo* effects of the methanolic extract of the rhizome of *Smilax perfoliata* (MESPR), a plant known for its traditional medicinal properties, on LPS-induced oxidative stress and inflammation in RAW 264.7 macrophages and L-arginine-induced AP mice model. In the *in vitro* model, MESPR exhibited significant antioxidant activity in RAW 264.7 macrophages by suppressing LPS-induced nitrosative-oxidative stress. MESPR treatment in mice reduced L-arginine-induced pancreatic enzyme changes, oxidative stress, and inflammation. It suppressed NF- κ B p65, nitrotyrosine, and iNOS expression while increasing Nrf-2 and SOD1, thus mitigating oxidative stress and inflammation in acute pancreatitis. These results indicate that MESPR alleviated L-arginine-induced acute pancreatitis by reducing oxidative-nitrosative stress and inflammation.

Keywords: Proteolytic zymogen, Acinar cell, Macrophage, Myeloperoxidase, Inflammatory cytokine, Reactive oxygen species