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Protective Role Of Rapamycin In Fibrotic Liver Ischemia/Reperfusion Injury

Min-Su PARK*[1]

[1]*Surgery, 경희대학교병원, REPUBLIC OF KOREA*

Background : Liver ischemia/reperfusion injury (IRI) is a well-documented phenomenon that occurs after liver resection and transplantation, posing a significant clinical challenge. We aim to contribute valuable insights into potential therapeutic interventions for fibrotic liver IRI, ultimately advancing our understanding of liver transplantation and resection outcomes.

Methods : Twenty-four mice were divided randomly into 4 equal groups: [1] the normal group, n = 6; [2] the liver fibrosis (LF) group, n = 6; [3] the LF and IR group, n = 6; and [4] the LF with treatment of rapamycin and IR group; n = 6.

Results : Key biomarkers assessing liver function, alanine aminotransferase and aspartate aminotransferase, significantly decreased with Rapamycin administration. There is a substantial decrease observed in inflammatory cytokines such as interleukin (IL) 6, IL-1B, tumor necrosis factor alpha, Transforming growth factor-beta (TGF-beta), and Inducible nitric oxide synthase (iNOS) with rapamycin treatment. Furthermore, NOX levels, caspase-3, and caspase-9 were reduced after rapamycin administration.

Conclusions : The application of rapamycin demonstrates appropriate effects in anti-inflammation, antioxidation, and anti-apoptosis, indicating significant therapeutic potential for fibrotic liver IRI.

Corresponding Author : **Min-Su PARK** (ikireida@hanmail.net)