

오메가 3 지방산이 풍부한 Fat-1 형질전환마우스에서 허혈성 재관류 신손상의 보호 효과

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Transgenic Mice with High Endogenous Omega-3 Fatty Acids are Protected from Ischemia-Reperfusion-Induced Acute Kidney Injury

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Background: Acute kidney injury (AKI) is common clinical event and has high mortality rate despite advanced curative strategies. Several studies found that omega-3 polyunsaturated fatty acid(PUFA) diet reduces kidney dysfunction followed by ischemic injury. However oral appliance of omega-3 PUFA, in fact, can cause much variability arisen from diet procedure. fat-1 transgenic mouse produce abundant omega-3 PUFA, result in balanced omega-6 : omega-3 ratio than wild type mouse. The purpose of this study, therefore, is to see whether omega-3 PUFA has advantages in AKI caused by ischemic injury using fat-1 transgenic mice.

Methods/Materials: Bilateral kidneys were subjected to 30 minutes of ischemia, renal ischemia-reperfusion injury (IRI) was performed. Animals(fat-1 mice and C57BL/6 mice) are sacrificed 24hours and 72 hours of reperfusion. The effects of omega-3 PUFA on renal IRI were evaluated in terms of renal function, tubular necrosis, inflammatory cell infiltration. After that renal function and severity of renal injury were estimated.

Result: fat-1 mice could reduce to increased BUN, serum creatinine and tissue Kim-1 levels and reduce neutrophil infiltration in body after IRI, compared with Wild Type mice.

Conclusions: Long-term and high dose of omega-3 supplement can protect renal function and facilitate renal recovery following IRI.

Key Words: 급성신부전, 허혈성재관류손상, 오메가3지방산

Acute kidney injury, Ischemic reperfusion injury, Omega-3