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Predictive Factors for Efficacy of AST-120 Treatment in Diabetic Nephropathy: a Prospective Single-Arm, Open-Label, Multi-Center Study

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ABSTRACT

Background: Removal of uremic toxins such as indoxyl sulfate by AST-120 is known to improve renal function and delay the initiation of dialysis in patients with advanced chronic kidney disease. However, it is unclear whether the addition of AST-120 to conventional treatments is effective in delaying the progression of renal dysfunction in patients with diabetic nephropathy.

Methods: A total of 100 patients with type 2 diabetes and renal dysfunction (serum creatinine levels ranging from 1.5 to 3.0 mg/dL) were recruited from eight centers in Korea and treated with AST-120 (6 g/day) for 24 weeks. The primary endpoint was improvement in renal function measured as the gradient of the reciprocal serum creatinine level (1/sCr) over time (i.e., the ratio of 1/sCr time slope for post- to pre-AST-120 therapy). A response was defined as a ratio change of the regression coefficient of 1/sCr \leq 0.90.

Results: Renal function improved in 80.3% of patients (61/76) after 24 weeks of AST-120 treatment. There were no differences between responder and non-responder groups in baseline characteristics except for diastolic blood pressure (73.5 \pm 9.5 mmHg in the responder group vs. 79.3 \pm 11.1 mmHg in the non-responder group; $P = 0.046$). Serum lipid peroxidation level decreased significantly in the responder group (from 2.25 \pm 0.56 μ mol/L to 1.91 \pm 0.72 μ mol/L; $P = 0.002$) but not in the non-responder group.

Conclusion: The addition of AST-120 to conventional treatments may delay the progression of renal dysfunction in diabetic nephropathy. The antioxidant effect of AST-120 might contribute to improvement in renal function.

Keywords: Diabetic Nephropathy; Indoxyl Sulfate; Creatinine; Oxidative Stress; Antioxidants

