THE KOREAN SOCIETY OF NEPHROLOGY
APCN & KSN 2024
June 13(Thu) - 16(Sun), 2024 Coex, Seoul, Korea
APSN
Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

Abstract Submission No.: A-0089

The Effect of AST-120 on regulatory T cell population in Patients with Chronic Kidney Disease

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Objectives : Recent studies have shown that regulatory T cells(Treg) play a role in protecting the kidney and are the expected immunotherapy target in CKD. AST-120 adsorbs uremic toxins and excretes them in the feces. In animal experiments, it has been reported that administration of AST-120 reduces the severity of glomerulosclerosis and the level of serum creatinine and the rate of decline in renal function in animals with chronic kidney disease. This study was conducted to evaluate the effect of AST-120 on Treg distribution and renal function.
Methods : This study included 27 adult patients diagnosed with CKD stages 3,4,5 at Kosin University Gospel Hospital from March to December 2020. Complete blood count, creatinine (Cr), sodium, potassium, albumin, and total CO_2 were included in the laboratory findings. For patients with chronic kidney disease stage 3, 4, and 5 who have been taking AST-120 for less than 1 month, These clinical and laboratory data were collected at the initiation of the study and after 3 months . Tregs were defined as $CD4^{+}CD25^{high}CD127^{low/-}FoxP3^{+}$ cells.
Results : The patient group with a glomerular filtration rate of less than 30 mL/min showed less decrease in renal function and a higher distribution of regulatory T cells compared to the group with a glomerular filtration rate of 30 or higher.
Conclusions : In CKD patients, taking AST-120 may help improve renal function by excreting uremic toxins from the body, thereby reducing immune dysfunction caused by uremic poisoning.

Table 1B.jpeg

Variables		N	Baseline	At 3 months	P-value
Age		16	60.38 (7.97)		
Body weight (kg)		8	70.41 (8.45)	69.04 (10.72)	0.447
Systolic BP (mmHg)		11	138.45 (19.04)	135.64 (20.32)	0.646
Diastolic BP (mmHg)		11	79.18 (9.25)	78.45 (11.63)	0.919
Pulse rate (frequency/minute)		11	81.27 (13.04)	79.91 (13.37)	0.824
Creatinine (CR)		16	2.81 (0.70)	2.88 (0.84)	0.724
Lympho_number_2		16	7221.88 (1310.80)	6176.12 (1664.69)	0.011
Lympho_2		16	72.22 (13.11)	61.76 (16.65)	0.011
CD 4(+)_2	Gating cell number	16	1925.06 (1056.66)	2234.56 (1119.22)	0.433
	Total		19.25 (10.57)	22.35 (11.19)	0.433
	Gated		26.13 (13.33)	35.25 (14.35)	0.044
CD 4(+) / CD 25(+)	Gating cell number	16	115.19 (73.21)	115.00 (96.71)	0.887
	Total		1.15 (0.73)	1.15 (0.97)	0.887
	Gated		7.81 (7.20)	5.76 (4.16)	0.528
CD 127(-) / FoxP3(+)	Gating cell number	16	1.31 (1.30)	1.88 (2.25)	0.370
	Total		0.01 (0.01)	0.02 (0.02)	0.371
	Gated		1.23 (1.22)	2.83 (4.15)	0.263

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