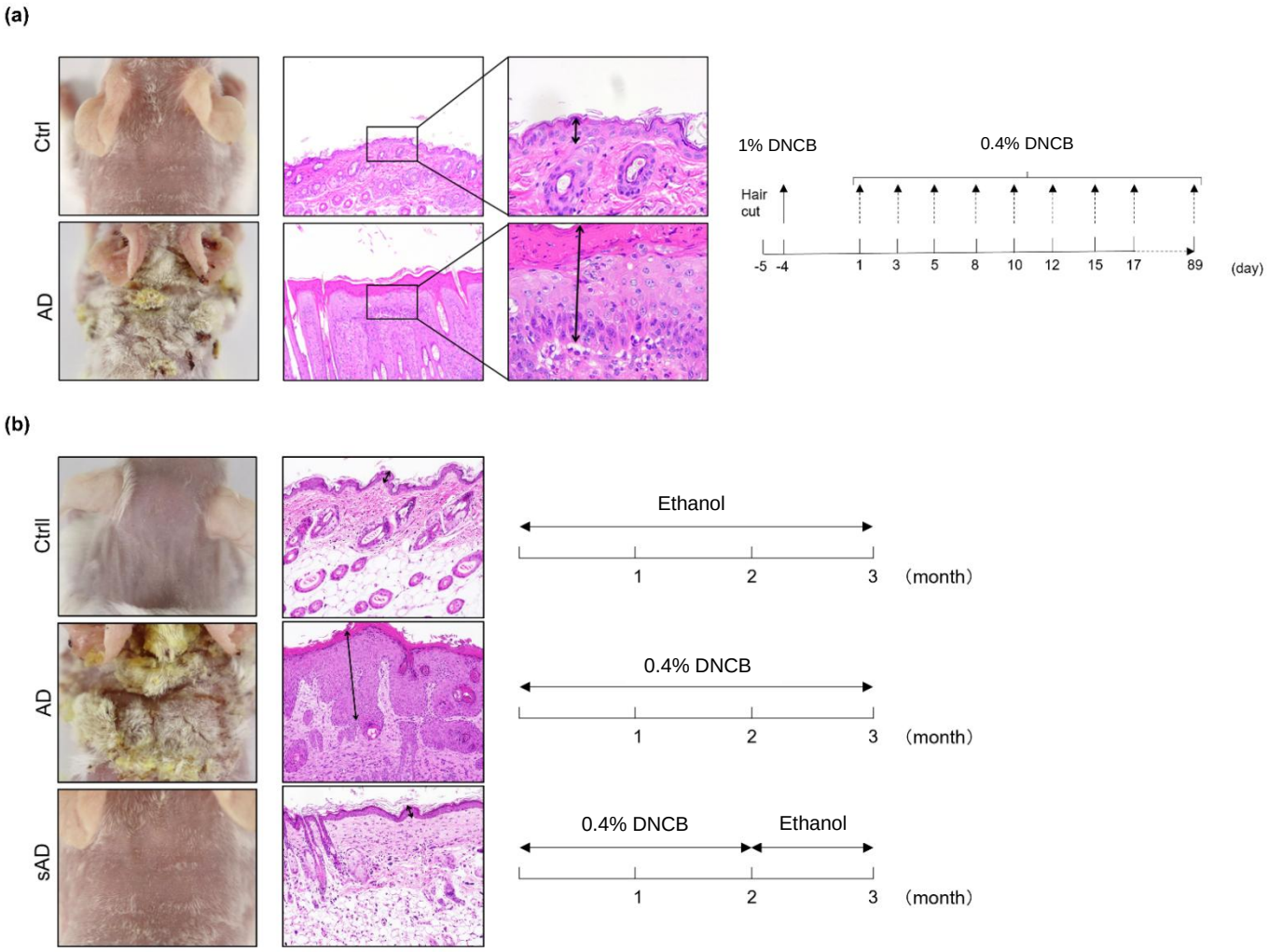
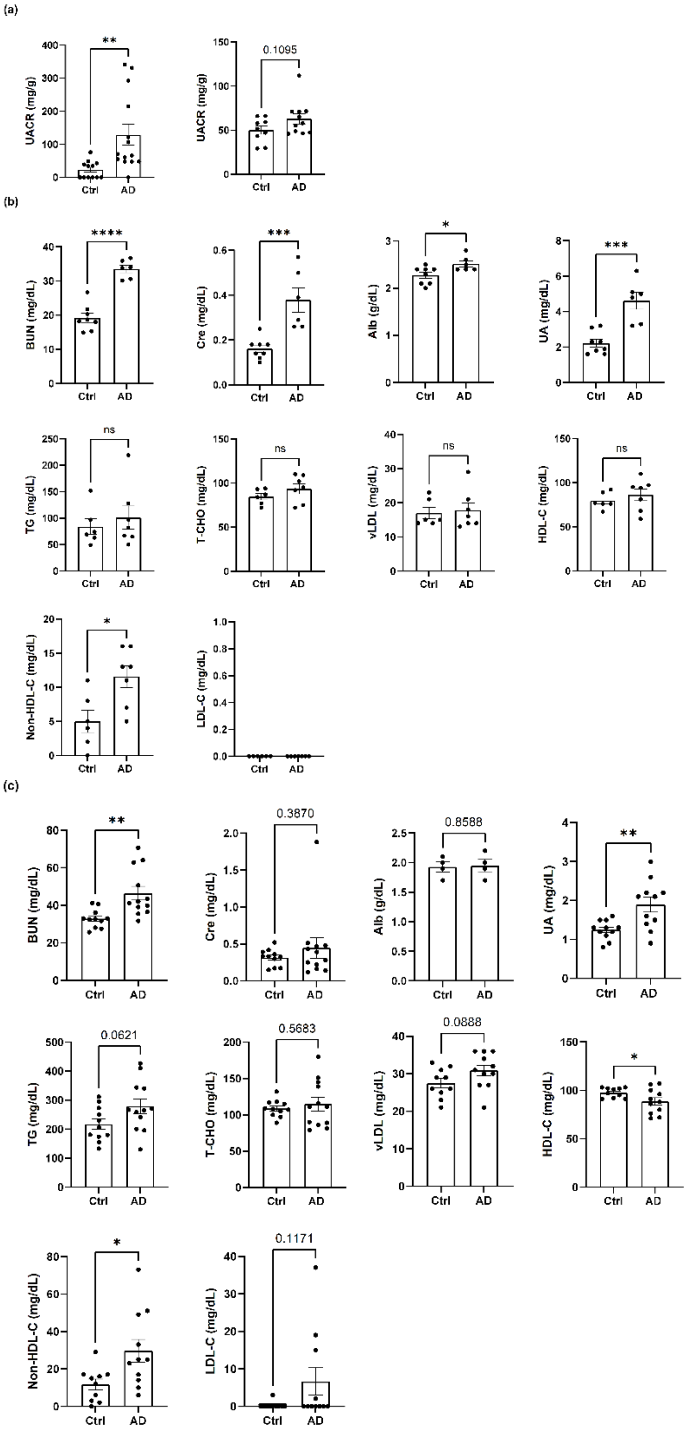
Supplementary Material

Supplementary Figures



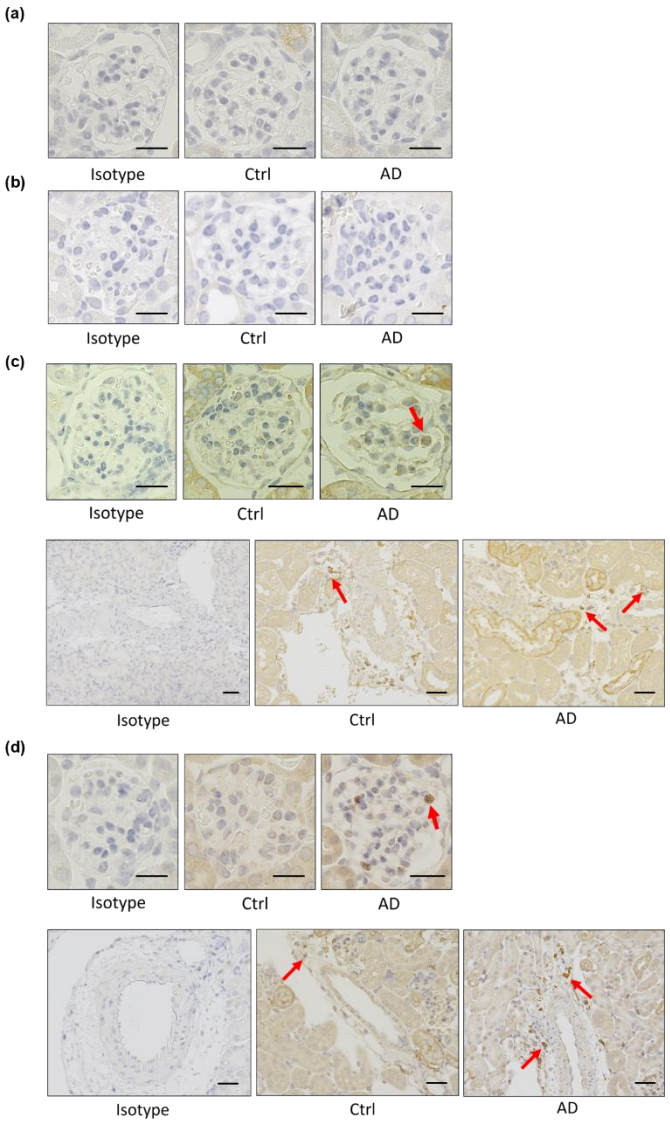
Supplementary Figure 1

(a) Representative histological sections of the dorsal skin of control mice and DNCB-induced AD model mice after staining with H&E. Magnification: 20× (left) and 40× (right). Ethanol was applied to control mice (Ctrl) 3 times a week for 3 months. DNCB-induced AD model mice were established by applying 0.4% DNCB to the mice 3 times a week for 3 months. (b) Representative histological sections of the dorsal skin of control mice and DNCB-induced AD model mice and sAD model mice after staining with H&E. Magnification: 20×. Ethanol was applied to control mice (Ctrl) 3 times a week for 3 months. DNCB-induced AD model mice (AD) were established by applying 0.4% DNCB 3 times a week for 3 months. DNCB-induced AD model mice in which inflammation subsided (sAD) were established by applying 0.4% DNCB to the mice 3 times a week for 2 months and then administering ethanol 3 times a week for 1 month.



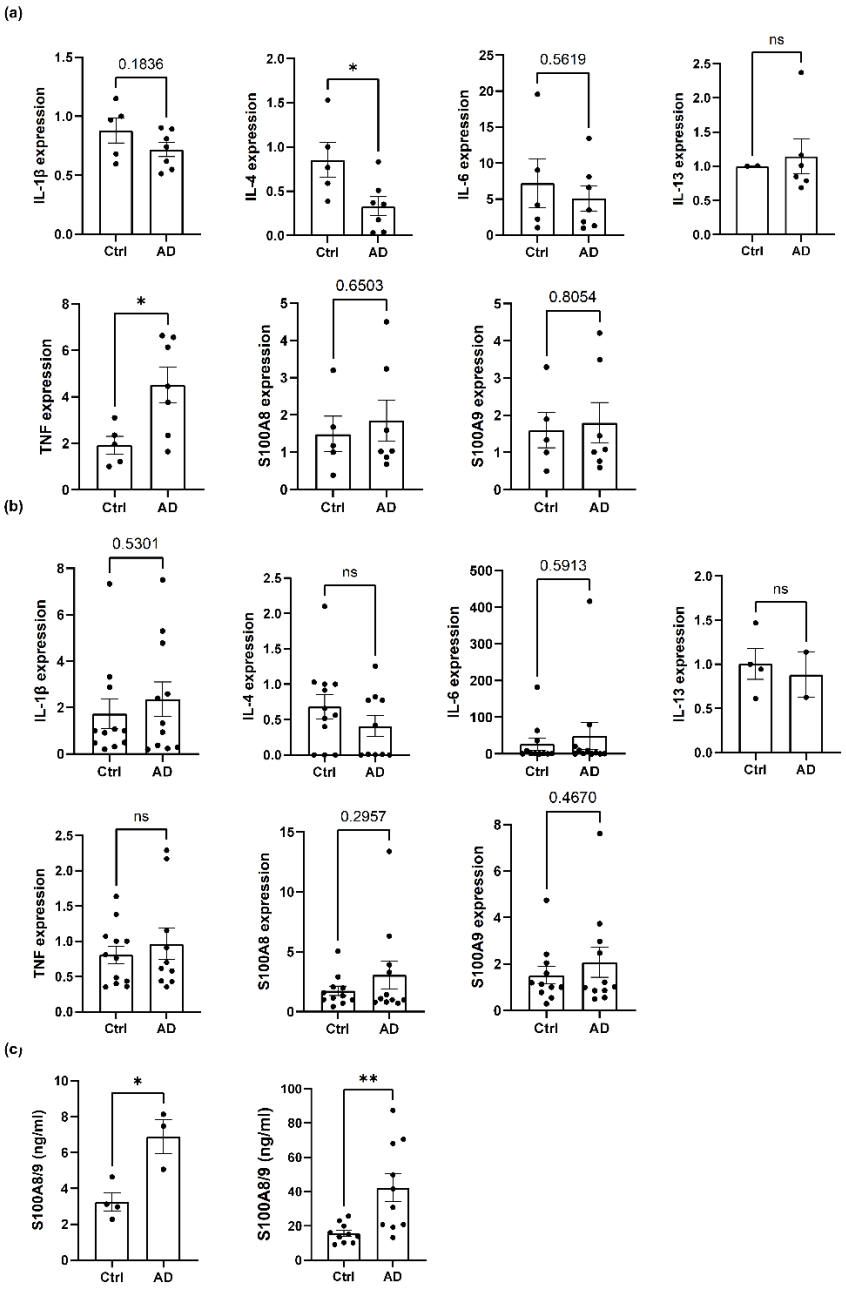
Supplementary Figure 2

(a) UACR values of control mice and MC903-induced AD-like model mice (left). UACR values of NC/Nga control mice and NC/Nga AD-like model mice (right). n = 7–11 per group. Mean ± SD. (b) Evaluation of kidney function and dyslipidemia in control mice and MC903-induced AD-like model mice. (c) Evaluation of kidney function and dyslipidemia in NC/Nga control mice and NC/Nga AD-like model mice. n = 14–16 per group. Mean ± SD. *P < 0.05, **P < 0.01, ***P < 0.001, ****P < 0.0001. Statistical significance was determined by a 2-tailed Student's *t* test.



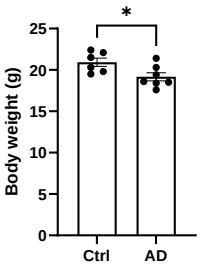
Supplementary Figure 3

(a) Immunostaining for CD4 in the kidneys of control mice and DNCB-induced AD-like model mice. Scale bar: 20 μm. (b) Immunostaining for CD8 in the kidneys of control mice and DNCB-induced AD-like model mice. Scale bar: 20 μm. (c) Immunostaining for Iba1 (upper panel) and MPO (lower panel) in the kidneys of control mice and MC903-induced AD-like model mice. Scale bar: 20 μm. (d) Immunostaining for Iba1 (upper panel) and MPO (lower panel) in the kidneys of NC/Nga control mice and NC/Nga AD-like model mice. Scale bar: 20 μm.



Supplementary Figure 4

(a) The mRNA levels of IL-1β, IL-4, IL-6, IL-13, TNF, S100A8, and S100A9 in the cortex of the kidney in control mice and MC903-induced AD-like model mice were measured by real-time PCR. n = 5–7 per group. (b) The mRNA levels of IL-1β, IL-4, IL-6, IL-13, TNF-α, S100A8, and S100A9 in the cortex of the kidney in NC/Nga control mice and NC/Nga AD-like model mice were measured by real-time PCR. n= 11 per group. (c) ELISA to determine the concentrations of the indicated factors in the serum of MC903-induced AD-like model mice (left) and NC/Nga AD-like model mice (right). n = 3–10 per group. Mean ± SD. *P < 0.05, **P < 0.01, ***P < 0.001, ****P < 0.0001. Statistical significance was determined by a 2-tailed Student's *t* test. The data are representative of 3 independent experiments.



Supplementary Figure 5

Body weights of the control and DNCB-induced AD-like model mice. n = 6-7, mean ± SD. *P < 0.05, **P < 0.01, ***P < 0.001, ****P < 0.0001. Statistical significance was determined by a 2-tailed Student's *t* test.

Supplementary Table 1. Antibodies used for immunohistochemistry

Antibody name	**Company**	**Catalog No.**	**Concentration used**
Iba1 antibody	Fujifilm	019-19741	1:300
MPO antibody	Invitrogen	SP72	1:100
CD4 antibody	Abcam	EPR6855	1:100
CD8 antibody	Santa Cruz Biotechnology	sc-1181	1:300

Supplementary Table 2. Antibodies used for immunofluorescence staining

Antibody name	**Company**	**Catalog No.**	**Concentration used**
Nephrin antibody	Abcam	EPR20993	1:300
Synaptopodin antibody	Santa Cruz Biotechnology	sc-515842	1:300
Podocin antibody	NOVUSBIO	JB51-33	1:300
CD80 antibody	Abcam	EPR1157(2)	1:200
CD163 antibody	Santa Cruz Biotechnology	sc-58965	1:200

Supplementary Table 3: Sequences of the primers used for real-time PCR

Primer name	Primer sequence (5'- to -3')	
RPS18	F	TTTGCGAGTACTCAACACCAACATC
	R	GAGCATATCTTCGGCCCACAC
NPHS1	F	GTCTGCACTGTCGATGCCAATC
	R	CCAGTTTGGCATGGTGAATCCG
NPHS2	F	GTGGAAGCTGAGGCACAAAGAC
	R	CAGCGACTGAAGAGTGTGCAAG
SYNPO	F	CTCTGGTATCCTTTGCCGTCTC
	R	TCTGACAGGCTTTCACTCCTCC
IL-1β	F	CCACAGACCTTCCAGGAGAATG
	R	GTGCAGTTCAGTGATCGTACAGG
IL-4	F	ATCATCGGCATTTTGAACGAGGTC
	R	ACCTTGGAAGCCCTACAGACGA
IL-6	F	AGACAGCCACTCACCTCTTCAG
	R	TTCTGCCAGTGCCTCTTTGCTG
IL-13	F	AACGGCAGCATGGTATGGAGTG
	R	TGGGTCCTGTAGATGGCATTGC
TNF	F	CTCTTCTGCCTGCTGCACTTTG
	R	ATGGGCTACAGGCTTGTCACTC
S100A8	F	CAAGGAAATCACCATGCCCTCTA
	R	ACCATCGCAAGGAACTCCTCGA
S100A9	F	GCACCCAGACACCCTGAACCA
	R	TGTGTCCAGGTCCTCCATGATG

Supplemental Table 4: Characteristics of participants with and without AD in US adults

Characteristics	AD (n = 1488) weighted percentage*	Non-AD (n = 12835) weighted percentage*	*P* value[§]
Gender			ns
Male	46.03%	47.64%	
Female	53.97%	52.36%	
Age ± SD (year)	44.10 ± 15.59	43.96 ± 17.68	ns
BMI ± SD (kg/m^2)	28.69 ± 6.97	28.49 ± 6.56	ns

AD, atopic dermatitis; SE, standard error; BMI, body mass index; ns, not significant. * Weighted percentage was calculated using NHANES survey design parameters. § P value was calculated using t test for the difference in means of age and BMI, while other tests were χ^2 tests for independence.