Supplementary Table S1 A detailed list of all used important abbreviations.

	FHAC	Female healthy appearing control
	FMOG	Female myelin oligodendrocyte glycoprotein immunized rats
	Fd1	Female rats, day 1 after cytokine injection
	Fd1VD	Female rats, day 1 after cytokine injection, vitamin D supplemented
	Fd3	Female rats, day 3 after cytokine injection
	Fd3VD	Female rats, day 3 after cytokine injection, vitamin D supplemented
	Fd15	Female rats, day 15 after cytokine injection
	Fd15VD	Female rats, day 15 after cytokine injection, vitamin D supplemented
	Fd30	Female rats, day 30 after cytokine injection
	Fd30VD	Female rats, day 30 after cytokine injection, vitamin D supplemented
	Fd45*	Female rats, day 45 after two cytokine injections (one on day 0, one on day 30)
	Fd45*VD	Female rats, day 45 after two cytokine injections (one on day 0, one on day 30), vitamin D supplemented
Group names	**MHAC**	Male healthy appearing control
	MMOG	Male myelin oligodendrocyte glycoprotein immunized rats
	Md1	Male rats, day 1 after cytokine injection
	Md1VD	Male rats, day 1 after cytokine injection, vitamin D supplemented
	Md3	Male rats, day 3 after cytokine injection
	Md3VD	Male rats, day 3 after cytokine injection, vitamin D supplemented
	Md15	Male rats, day 15 after cytokine injection
	Md15VD	Male rats, day 15 after cytokine injection, vitamin D supplemented
	Md30	Male rats, day 30 after cytokine injection
	Md30VD	Male rats, day 30 after cytokine injection, vitamin D supplemented
	Md45*	Male rats, day 45 after two cytokine injections (one on day 0, one on day 30)
	Md45*VD	Male rats, day 45 after two cytokine injections (one on day 0, one on day 30), vitamin D supplemented
Tissue markers	**PLP**	Proteolipid protein, myelin protein marker
	Iba1	Ionized calcium-binding adaptor molecule 1, marker for activated microglia

	Casp3	Caspase 3, marker for apoptotic cells
	NeuN	Neuronal-Nuclei, marker to detect most postmitotic neuronal cell types
	Cu++oxLDL	Cu^{++} oxidized low-density lipoprotein
	HOCLoxLDL	Hypochlorous acid oxidized low-density lipoprotein
Serum markers	TAC	Total anti-oxidative capacity
	PP	Polyphenols
	sNfL	Serum neurofilament light chain

Supplementary Table S2 Primary and secondary antibodies used during this study with detailed information.

Antibody	Target	Host	Dilution	Marker/ Purpose	Company and Catalog number	AB ID
Caspase3	Anti-active Caspase3 antibody	rabbit	1:500	Apoptosis	Abcam ab2302	AB_302962
Cu^{++}oxLDL	Anti-lipoprotein (a), oxidized via Cu^{++}	sheep	1:3000	Oxidative Stress	FT-OL11	
GFAP	anti-GFAP Ab-6 (Clone ASTRO6)	mouse	1:100	Activated Astrocytes	Thermo Scientific MS-1376	AB_1095984
HOCloxLDL	Anti-modified LDL (via HOCl)	rabbit	1:2000	Oxidative Stress	HL02	
Iba1	Anti Ionized calcium-binding adaptor molecule 1	rabbit	1:1000	Mikroglia	Wako 019-19741	AB_839504
NeuN	Anti- Neuronal-Nuclei, clone A60 (KC)	mouse	1:100	Neurons	Millipore MAB377-KC	AB_2298772
NfH	Anti-200kD Neurofilament Heavy Chain antibody	rabbit	1:2000	Neuro-filament	Abcam ab8135	AB_306298
PLP	Anti-myelin	mouse	1:500	De-	AbD	AB_22371

	proteolipid protein			myelination	Serotec MCA839G	98
anti-rabbit ImmPRESS reagent	anti-rabbit IgG	horse	ready to use	Secondary antibody	Vector MP-7401	AB_233652 9
anti-mouse ImmPRESS reagent	anti-mouse IgG	horse	ready to use	Secondary antibody	Vector MP-7422	AB_233652 7

Supplementary Table S3 sNfL results of female VD⁻ rats.

	FHAC	Fd15	Fd30	Fd45*
N =	5	7	4	5
Median	5.11	5.90	9.10	37.00
Interquartile range	1.83	4.15	14.03	46.65
VS Fd15 p =	0.295	x	0.086	**0.009**
VS Fd30 p =	**0.027**	0.086	x	**0.027**
VS Fd45* p=	**0.009**	**0.009**	**0.027**	x