Supplemental Material

Fine Particulate Air Pollution and the Expression of microRNAs and Circulating Cytokines Relevant to Inflammation, Coagulation, and Vasoconstriction

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Table of Contents

Table S1. The basic information for assay kits of cytokines in this study.

Cytokines	Manufacturers	Location of production	Limits of detection
IL-1	Thermofisher	Bender MedSystems GmbH Campus Vienna Biocenter 2,1030 Vienna, Austria	0.16 pg/mL
IL-6	Thermofisher	Bender MedSystems GmbH Campus Vienna Biocenter 2,1030 Vienna, Austria	0.08 pg/mL
TNF-α	Thermofisher	Bender MedSystems GmbH Campus Vienna Biocenter 2,1030 Vienna, Austria	0.31 pg/mL
TLR-2	Raybiotech	3607 Parkway Lane Suite 200 Norcross, GA 30092	0.32 ng/ml ng/ml
CD40L	Raybiotech	3607 Parkway Lane Suite 200 Norcross, GA 30092	6 pg/ml
ICAM-1	Raybiotech	3607 Parkway Lane Suite 200 Norcross, GA 30092	150 pg/ml
F3	Assaypro	3400 Harry S Truman Blvd St. Charles, MO 63301-4046, USA	12.5 pg/ml
PAI-1	Thermofisher	Bender MedSystems GmbH Campus Vienna Biocenter 2,1030 Vienna,Austria	78 pg/mL
ET-1	Enzo	10 Executive Blvd Farmingdale, NY 11735 USA	2 pg/ml
ACE-1	Rnd	614 McKinley Place NE Minneapolis, MN 55413 USA	0.78 ng/mL

Abbreviations: IL-1, interleukin-1; IL-6, interleukin-6; TNF-α, tumor necrosis factor-α; TLR-2, toll-like receptot-2; CD40L, CD40 ligand; ICAM-1, intercellular adhesion molecule-1; F3, tissue factor; PAI-1: plasminogen activator inhibitor-1; ET-1, endothelin-1; ACE-1, angiotensin converting enzyme-1.

Table S2. miRNAs selected for cytokine genes and the basis for their selection

miRNA	Gene	Basis for miRNA selection[a]
miR-21-5p	*IL1*	miRTarBase (reporter assay and qPCR)
miR-26a-5p	*IL6*	miRTarBase (reporter assay)
miR-187-3p	*TNF*	miRTarBase (reporter assay and qPCR), EXIQON
miR-146a-5p	*TLR2*	miRTarBase (reporter assay, western blot, and qPCR)
miR-19b-3p	*TLR2*	miRTarBase (reporter assay, western blot, and qPCR)
miR-146a-5p	*CD40LG*	miRTarBase (reporter assay, western blot, and qPCR)
miR-21-5p	*ICAM1*	miRTarBase (reporter assay and qPCR)
miR-93-5p	*ICAM1*	miRTarBase (qPCR)
miR-146a-5p	*ICAM1*	miRTarBase (western blot and qPCR)
miR-19b-3p	*F3*	EXIQON
miR-93-5p	*F3*	miRDB (score=98)
miR-145-5p	*SERPINE1*	miRTarBase (reporter assay, western blot, and qPCR)
miR-1-3p	*EDN1*	miRTarBase (reporter assay and qPCR), miRDB (score=95)
miR-199a-5p	*EDN1*	miRTarBase (reporter assay), EXIQON
miR-4492	*ACE*	miRDB (score=100)

[a] miRTarBase: strong evidence based on reporter assay, western blot, or qPCR (http://mirtarbase.mbc.nctu.edu.tw/php/search.php#target); EXIQON: validated in EXIQON database (https://www.exiqon.com/miRSearch); miRDB: listed in miRDB database with score ≥95 (http://www.mirdb.org/miRDB/).

Table S3. The estimates for the order term, the period term and the intervention×period interaction term [b] in the main linear mixed-effect models.

Biomarkers	Order			Period			Interaction		
	Beta	p-value	FDR	Beta	p-value	FDR	Beta	p-value	FDR
microRNAs									
miR-21-5p	-10	0.71	0.97	66	0.08	0.15	22	0.44	0.75
tmiR-26a-5p	3	0.90	0.97	24	0.47	0.56	10	0.70	0.89
miR-187-3p	-8	0.78	0.97	-72	0.03	0.08	24	0.45	0.89
miR-146a-5p	-18	0.58	0.97	-87	0.03	0.08	36	0.29	0.74
miR-19b-3p	-64	0.17	0.93	122	0.01	0.08	-16	0.75	0.89
miR-93-5p	-19	0.37	0.97	115	0.01	0.08	7	0.77	0.89
miR-145-5p	3	0.93	0.97	-71	0.05	0.11	27	0.48	0.76
miR-1-3p	22	0.51	0.97	-82	0.02	0.08	31	0.40	0.89
miR-199a-5p	-20	0.37	0.93	-21	0.43	0.54	5	0.80	0.89
miR-4492	36	0.21	0.93	-85	0.02	0.08	24	0.43	0.75
mRNAs									
IL1	-18	0.52	0.93	19	0.52	0.60	-27	0.32	0.74
IL6	31	0.34	0.97	26	0.30	0.40	-31	0.26	0.74
TNF	-6	0.77	0.97	25	0.13	0.23	-22	0.21	0.74
TLR2	2	0.92	0.97	26	0.26	0.39	-11	0.62	0.89
CD40LG	2	0.92	0.97	36	0.08	0.15	-3	0.89	0.89

ICAM1	1	0.97	0.97	-26	0.31	0.40	-13	0.56	0.85
F3	9	0.74	0.97	-81	0.03	0.08	10	0.71	0.89
SERPINE1	-14	0.59	0.97	-42	0.03	0.08	-41	0.05	0.37
EDN1	-23	0.31	0.93	11	0.74	0.79	-65	0.01	0.09
ACE	-2	0.94	0.97	56	0.05	0.11	-39	0.15	0.75
Cytokines									
IL-1	-33	0.10	0.97	-48	0.02	0.08	-52	0.01	0.09
IL-6	19	0.68	0.97	4	0.92	0.92	6	0.89	0.89
TNF-α	15	0.35	0.93	-20	0.23	0.36	15	0.31	0.74
TLR-2	7	0.66	0.97	-58	0.01	0.08	-3	0.84	0.89
CD40L	-22	0.11	0.93	-39	0.01	0.08	-29	0.01	0.14
ICAM-1	-15	0.15	0.93	2	0.90	0.92	-16	0.16	0.74
F3	-3	0.89	0.97	8	0.28	0.40	-15	0.18	0.74
PAI-1	-8	0.43	0.93	-4	0.60	0.66	-8	0.38	0.74
ET-1	-25	0.33	0.93	-15	0.16	0.26	-15	0.32	0.74
ACE-1	-12	0.23	0.93	12	0.06	0.13	2	0.78	0.89

Note: The order term was included into the models by two levels: "1" for the true-to-sham order, and "0" for the sham-to-true order; The period term was included into the models by two levels: "1" for the first stage, and "0" for the second stage.

Abbreviations as in Table S1.