

Supplementary Online Content

Qin X-Y, Zhang S-P, Cao C, Loh YP, Cheng Y. Aberrations in peripheral inflammatory cytokine levels in Parkinson disease: a systematic review and meta-analysis.

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eTable. Characteristics of Included Studies Measuring Peripheral Blood Cytokine Concentrations

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This supplementary material has been provided by the authors to give readers additional information about their work.

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Study/Year	Cytokines Measured	Country	Samples (PD/HC)	Gender (% Male) (PD/HC)	Mean Age (PD/HC)	Mean PD duration	Mean H & Y scale	Mean UPDRS	Sample Source	Diagnosis	Assay type	Medication
Akil et al. 2015 ¹	CRP	Turkey	51/50	56.8/52	69.5/ 65.4	NA	NA	NA	Serum	UK PDBBC/ H & Y stage	Nephelometric assay	NA
Andican et al. 2012 ²	CRP	Turkey	45/25	60/55.6	63.6/ 60.2	6.4	2.24	NA	Plasma	H & Y stage	ELISA	Y
Brodacki et al. 2008 ³	IL-6, IFN- γ , TNF- α , IL-2, IL-4, IL-10	Poland	31/20	54.8/50	61.5/67	6.9	2.55	28.8	Serum	UK PDBBC/ H & Y stage/ UPDRS	Bead based cytokine kit	Y
Bu et al. 2015 ⁴	IL-1 β , IL-6, TNF- α , IFN- γ	China	131/141	51.9/53.2	67/68	3.59	2.24	NA	Serum	UK PDBBC/ H & Y stage/ S&E	ELISA	NA
Choi et al. 2008 ⁵	TNF- α , IFN- γ , IL-4, IL-8, RANTES	Korea	8.0/13	0/38.5	73/68	NA	NA	NA	Serum	UK PDBBC	Luminex™ 100 system	N
Dobbs et al. 1999 ⁶	TNF- α , IL-6	UK	78/140	55.1/48.6	69.4/ 61.4	NA	2.87	NA	Serum	H & Y stage	TNF-a : ELISA IL-6: cytoscreen kit	NA
Dursun et al. 2015 ⁷	IL-1 β , IL-6	Turkey	40/32	NA	71.7/ 72.1	NA	NA	NA	Serum	UK PDBBC/ H & Y stage/ UPDRS/ S&E	ELISA	Y
Gangemi et al. 2003 ⁸	RANTES	Italy	24/12	62.5/	61.8/	4.58	2.2	NA	Serum	Gelb criteria/ H & Y stage	ELISA	Y

Gruden et al. 2012 ⁹	IL-6, IFN- γ , TNF- α	Russia	32/26	62.5/73.1	60.8/ 63.0	NA	2.1	23.3	Serum	H & Y stage/ UPDRS	ELISA	Y
Hofmann et al. 2009 ¹⁰	IL-6	Brazil	40/23	55/34.8	66/60	NA	NA	NA	Serum	UK PDBBC/ H & Y stage/ S&E	ELISA	Y
Hu et al. 2015 ¹¹	IL-1 β , TNF- α	China	152/31	NA	NA	NA	NA	NA	Serum	UK PDBBC/ H & Y stage/ UPDRS	ELISA	NA
Koziorowski et al. 2012 ¹²	IL-6, IL-1 β , TNF- α , IL-8, IL-10	Poland	60/24	50/50	59/64	11.27	2.35	25.4	Serum	UK PDBBC/ H & Y stage/ UPDRS	Luminex™ 100 system	Y
Lindqvist et al. 2012 ¹³	IL-6, TNF- α , CRP	Sweden	86/40	59/35	64.2/ 64.8	6.9	1.9	17.3	Serum	H & Y stage/ UPDRS	Chemiluminescent assays	NA
Mahlknecht et al. 2012 ¹⁴	RANTES	Austria	20/30	40/40	NA	NA	NA	NA	Serum	H & Y stage	ELISA	Y
Pirttila et al. 1994 ¹⁵	IL-1 β	Finland	10.0/18	NA	NA	NA	NA	NA	Serum	NA	ELISA	NA
Rentzos et al. 2007 ¹⁶	RANTES	Greece	41/19	48.8/47.4	67.5/ 65.8	NA	NA	NA	Serum	H & Y stage/ UPDRS	ELISA	Y
Rentzos et al. 2009 ¹⁷	IL-10	Greece	41/19	48.8/47.4	67.5/ 65.8	NA	NA	NA	Serum	H & Y stage/ UPDRS	ELISA	Y
Rota et al. 2006 ¹⁸	IL-10	Italy	14/25	64.3/62.5	66/69	3.02	NA	NA	Serum	H & Y stage	RIA	Y

Scalzo et al. 2010 ¹⁹	IL-6	Brazil	44/22	50/36.4	65.7	7.4	NA	48.5	Serum	H & Y stage/ UPDRS/ S&E	ELISA	NA
Selikhova et al. 2002 ²⁰	IL-6	Russia	27/15	NA	69.7/ 62.45	NA	NA	42.7	Plasma	UPDRS	ELISA	Y
Song et al. 2009 ²¹	CRP	Korea	212/119	36.3/49.6	68.74/ 66.59	1.73	2.08	NA	Serum	UK PDBBC/ H & Y stage	NA	N
Song et al. 2013 ²²	CRP	Korea	72/84	52.8/59.5	69.74/ 73.18	1.64	2.02	NA	Serum	UK PDBBC/ H & Y stage	NA	NA
Styputa et al. 1996 ²³	IL-2, IL-6	Poland	21/25	66.7	64.6	NA	NA	NA	Plasma	H & Y stage	RIA	N
Tang et al. 2014 ²⁴	IL-6, RANTES	China	78/80	76.9/73.8	76.3/ 75.4	5.51	2.6	NA	Serum	UK PDBBC/ H & Y stage/ UPDRS	ELISA	Y
Williams- Gray et al. 2016 ²⁵	IL-6, IFN- γ , TNF- α , IL-1 β , IL-2, IL-4, IL-8, IL-10, CRP	UK	230/93	61.7/52.7	66.4/68	0.6	NA	27.9	Serum	UK PDBBC/ UPDRS	Chemiluminescent kit	Y

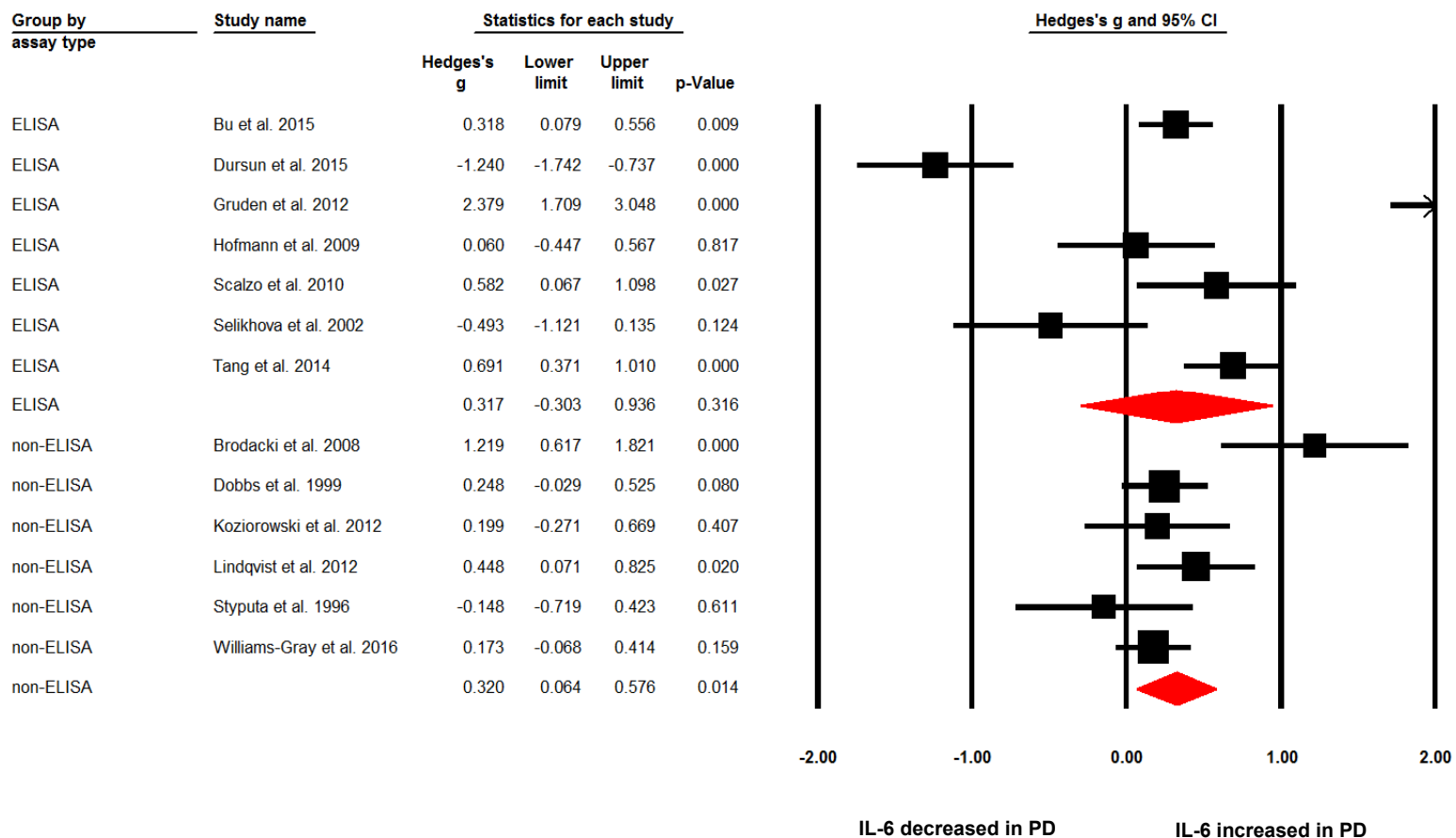
Abbreviations: PD, Parkinson's Disease; HC, Healthy Controls; CRP, C-reactive protein; IL, Interleukin; TNF, Tumor Necrosis factor; IFN, Interferon; H & Y, Hoehn and Yahr; PDBBC; Parkinson's Disease Brain Bank Criteria; UPDRS, Unified Parkinson Disease Rating Scale; ELISA, Enzyme-Linked ImmunoSorbent Assay; RIA, Radioimmunoassay Y, Yes; N, No; NA, not available; SD, standard deviation

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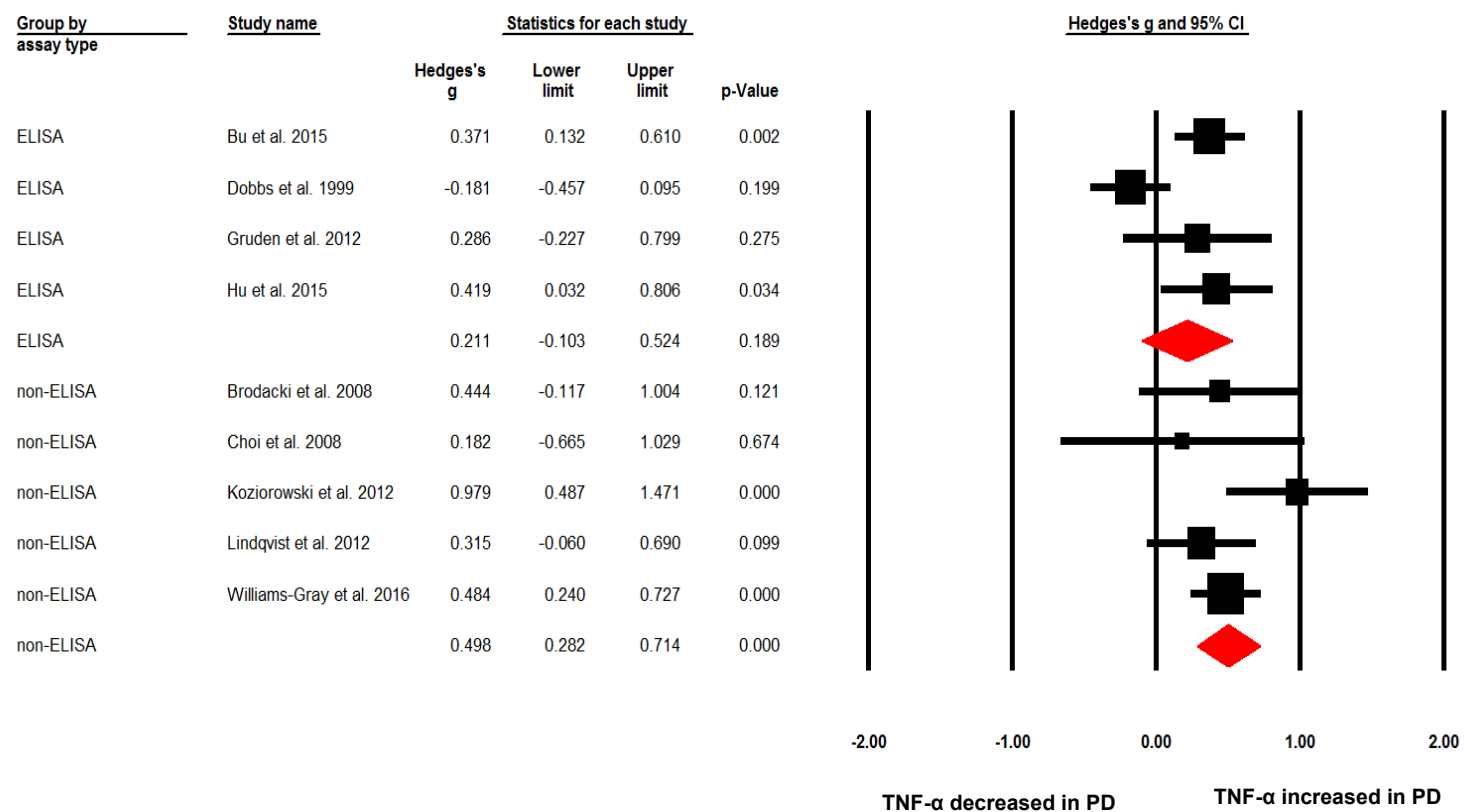
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eFigure 1. Subgroup Analysis Stratified by Assay Type for IL-6



Forrest plot showing pooled results comparing blood IL-6 levels between PD patients and HC subjects stratified by assay type (ELISA and non-ELISA). The sizes of the squares are proportional to study weights.

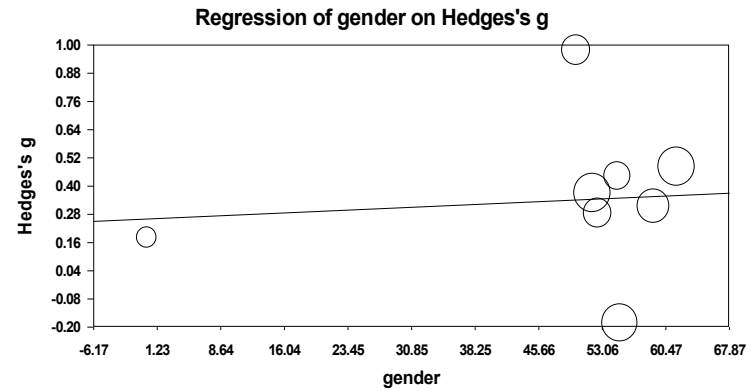
eFigure 2. Subgroup Analysis Stratified by Assay Type for TNF



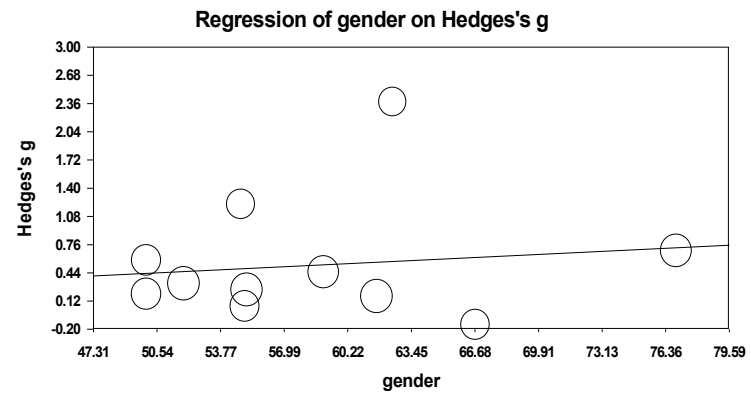
Forest plot showing pooled results comparing blood TNF- α levels between PD patients and HC subjects stratified by assay type (ELISA and non-ELISA). The sizes of the squares are proportional to study weights.

eFigure 3. Meta-regression for TNF and IL-6

A



B



(A) Association between age (left panel), gender (right panel) and effective size (Hedges's g) for TNF- α . **(B)** Association between age (left panel), gender (right panel) and effective size (Hedges's g) for IL-6. The sizes of the circles are proportional to study weights.