

Phospholipase A2 as a point of care alternative to serum amylase and pancreatic lipase

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SUPPORTING INFORMATION

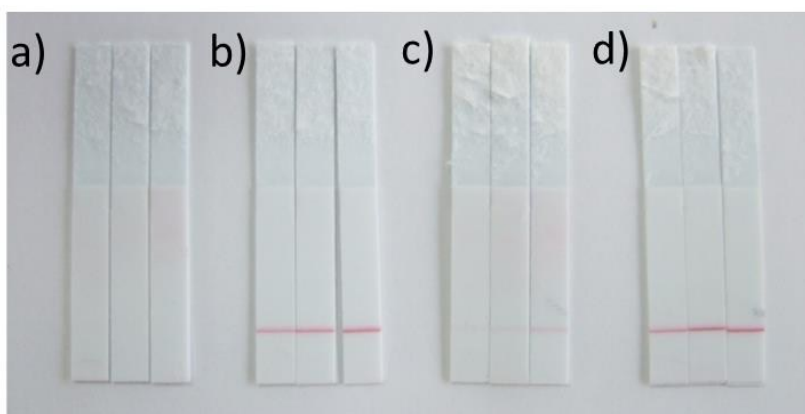


Figure S1. Images of LFD test strips prepared with BSA conjugated Fab 1BD2 (a-b) and BSA conjugated Fab 1BD1 (c-d) immobilised on the test line. Strips have been run with 0 ng/mL (a, c) and 100 ng/mL (b, d) PLA₂-IB in the assay buffer HEPES (50 mM, 10 mg/mL BSA), and BSA conjugated Fab 1BC1 AuNPs prepared in 20 mM TAPS pH 8.5 (left strips), 20 mM Borate pH 8.5 (middle strips) and 20 mM Borate pH 9.5 (right strips). Non-specific binding is clearly visible on the 1BD1 test lines (c), but not on the 1BD2 test lines (a).

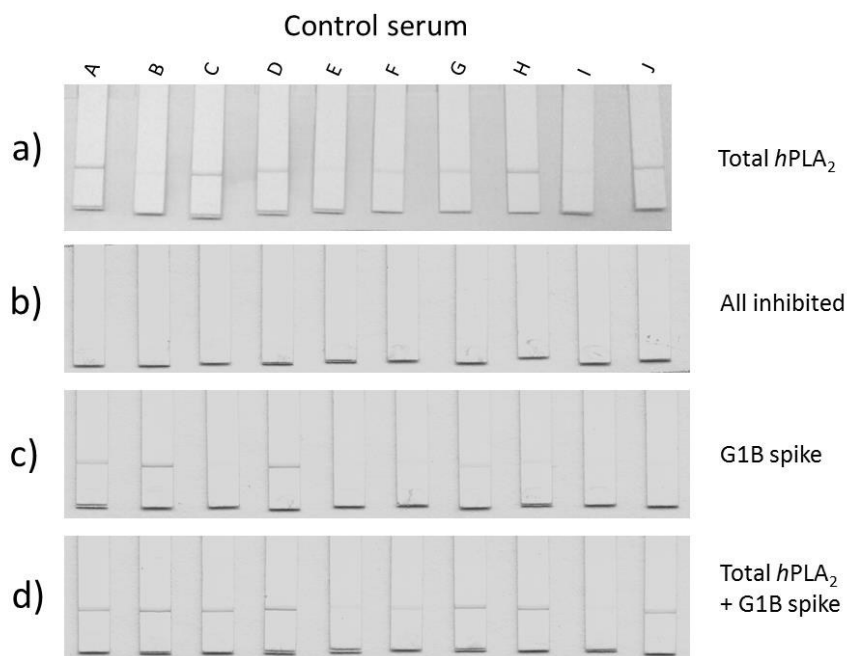


Figure S2. Images of LFD strips after running the activity assay on a range of 10 healthy serum samples. a) Signal without any inhibition of the enzyme. b) Signal after inhibition of sPLA₂-IIA with 10 μ M LY315920, c) Signal after inhibition of sPLA₂-IIA with 10 μ M LY315920 and addition of a 5 nM PLA₂-IB spike, and d) Signal without inhibitor but with the addition of a 5 nM PLA₂-IB spike. In cases where the total PLA₂ activity is low, the PLA₂-IB spike can be seen to have a variable effect on the signal generation.

Table S1. Spearman and Pearson correlation coefficients between the biomarkers measured

	n	Amylase : Lipase	Amylase : [sPLA ₂ -IB]	Lipase : [sPLA ₂ -IB]	sPLA ₂ -IB (concentration : activity)	sPLA ₂ -IB concentration (ELISA : LFD)
ρ (Spearman)						
All samples	153	0.744	0.677	0.684	0.357	0.962
All Clinical and controls	118	0.728	0.702	0.755	0.477	0.960
Unique clinical and controls	86	0.785	0.738	0.763	0.553	0.949
ρ (Pearson)						
All samples	153	0.629	0.555	0.448	0.575	0.872
All Clinical and controls	118	0.633	0.575	0.535	0.621	0.869
Unique clinical and controls	86	0.711	0.738	0.661	0.713	0.813

Table S2. Welch's one way analysis of variance (ANOVA) tables for the biomarkers measured (all clinical samples, n=118)

AMYLASE	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.203	0.003
Disease ctrl.	0.203	1	<0.001
Healthy ctrl.	0.003	<0.001	1

LIPASE	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.009	<0.001
Disease ctrl.	0.009	1	<0.001
Healthy ctrl.	<0.001	<0.001	1

[sPLA₂-IB] (ELISA)	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.051	0.001
Disease ctrl.	0.051	1	<0.001
Healthy ctrl.	0.001	<0.001	1

[sPLA₂-IB] (LFD)	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.024	0.001
Disease ctrl.	0.024	1	<0.001
Healthy ctrl.	0.001	<0.001	1

sPLA₂-IB Activity	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.380	0.014
Disease ctrl.	0.380	1	<0.001
Healthy ctrl.	0.014	<0.001	1

Table S3. Welch's one way analysis of variance (ANOVA) tables for the biomarkers measured (first sample from each unique patient n=86)

AMYLASE	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.317	0.039
Disease ctrl.	0.317	1	<0.001
Healthy ctrl.	0.039	<0.001	1

LIPASE	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.146	0.005
Disease ctrl.	0.146	1	<0.001
Healthy ctrl.	0.005	<0.001	1

[sPLA₂-IB] (ELISA)	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.111	0.012
Disease ctrl.	0.111	1	<0.001
Healthy ctrl.	0.012	<0.001	1

[sPLA₂-IB] (LFD)	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.093	0.027
Disease ctrl.	0.093	1	<0.001
Healthy ctrl.	0.027	<0.001	1

sPLA₂-IB Activity	Pancreatitis	Disease ctrl.	Healthy ctrl.
Pancreatitis	1	0.267	0.056
Disease ctrl.	0.267	1	0.002
Healthy ctrl.	0.056	0.002	1

Table S4. ROC characteristics (Pancreatitis vs disease controls)

	AUC	Threshold	Sensitivity	Specificity
Amylase	0.607	693	0.588	0.617
Lipase	0.704	562	0.882	0.605
sPLA₂-IB (ELISA)	0.685	32	0.765	0.580
sPLA₂-IB (LFD)	0.719	43	0.765	0.630
sPLA₂-IB activity	0.485	1460	0.529	0.605

Table S5. ROC characteristics (Pancreatitis vs healthy controls)

	AUC	Threshold	Sensitivity	Specificity
Amylase	0.909	410	0.882	0.950
Lipase	0.947	396	0.941	1.000
sPLA₂-IB (ELISA)	0.913	18	0.882	1.000
sPLA₂-IB (LFD)	0.928	21	0.882	1.000
sPLA₂-IB activity	0.721	1360	0.765	0.600

Table S6. ROC characteristics (Pancreatitis vs disease controls) for unique patients only

	AUC	Threshold	Sensitivity	Specificity
Amylase	0.642	685	0.625	0.655
Lipase	0.692	562	0.875	0.690
sPLA₂-IB (ELISA)	0.684	49	0.750	0.707
sPLA₂-IB (LFD)	0.734	78	0.750	0.845
sPLA₂-IB activity	0.588	2050	0.500	0.776

Table S7. ROC characteristics (Pancreatitis vs healthy controls) for unique patients only

	AUC	Threshold	Sensitivity	Specificity
Amylase	0.944	410	0.875	0.950
Lipase	0.888	430	0.875	1.000
sPLA₂-IB (ELISA)	0.816	33	0.875	1.000
sPLA₂-IB (LFD)	0.847	50	0.750	1.000
sPLA₂-IB activity	0.806	1360	0.875	0.600