

Supplementary Information

Interference Study of Glucose Level Measurements using Glucometers based on Glucose Oxidase

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Table S1. Sets of measurements performed in order to establish the linearity testing

Glucometer Linearity Testing data in mg/dL	Aqueous Glucose Solutions												Buffer + Dye Glucose Solutions									
	SET 1			SET 2			SET 3			SET 4			SET 5			SET 6			SET 7			
	Conc. Range	Measured Value	Average	Conc. Range	Measured Value	Average	Conc. Range	Measured Value	Average	Conc. Range	Measured Value	Average	Conc. Range	Measured Value	Average	Conc. Range	Measured Value	Average	Conc. Range	Measured Value	Average	
Glucometer 1	Hypo			Hypo			Hypo			Hypo			Hypo	65	62.67	Hypo	65	64.33	Hypo	65	67.67	
								61	64		69											
								62	64		69											
	Normal			Normal			Normal			Normal			Normal	165	169.67	Normal	160	163.33	Normal	178	179.67	
								171	164		179											
								173	166		182											
	Hyper			Hyper			Hyper			Hyper			Hyper	354	350.67	Hyper	346	343	Hyper	354	357	
								352	344		360											
								346	339		357											
	Glucometer 2	Hypo			Hypo			Hypo	60	56.67	Hypo	50	50.67	Hypo	49	50	Hypo			Hypo		
							57		51			50										
							53		51			51										
Normal		51	47.67	Normal	53	66.33	Normal	102	101	Normal	97	96	Normal	105	97.33	Normal			Normal			
		44			82			96			99			95								
		48			64			105			92			92								
Hyper		102	98.67	Hyper	140	123.67	Hyper	144	144	Hyper	125	124.33	Hyper	148	144.67	Hyper			Hyper			
		99			122			147			129			145								
		95			109			141			119			141								
Glucometer 3		Hypo	61	63	Hypo	37	40	Hypo	110	111.67	Hypo	98	100.67	Hypo	110	107	Hypo			Hypo		
	66		39			112			98			106										
	62		44			113			106			105										
	Normal	138	139.67	Normal	116	113	Normal	220	218.33	Normal	213	213.33	Normal	209	207	Normal			Normal			
		137			109			215			217			213								
		144			114			220			210			199								
	Hyper	261	259.67	Hyper	231	227.33	Hyper	366	363.67	Hyper	359	351.33	Hyper	331	330.67	Hyper			Hyper			
		260			230			363			346			334								
		258			221			362			349			327								

Table S2. Sets of measurements performed during interference testing – hypoglycemic range

values in mg/dL	Interference Testing -Hypoglycemic Glucose Concentration Range								
	Ascorbic Acid			Oxalic Acid			Mannose		
(G1)	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
5	5	68	66.6666667	0.05		57	0.5	47	46.3333333
		67						47	
		65						45	
25	25	129	127.3333333	0.1		57	1	45	43.3333333
		123						43	
		130						42	
50	50	195	201.3333333	0.2	57	57	1.5		
		207			57				
		202							
100	100	341	333.6666667	0.3		57	2	51	51
		328						50	
		332						52	
200	200	534	530	0.4		57	2.5	52	52
		530							
		526							

	Acorbic Acid			Oxalic Acid			Mannose		
(G2)	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
5	5	55	57.3333333	0.05	59	57	0.5	48	46.6666667
		58			56			45	
		59			56			47	
25	25	107	105.6666667	0.1	54	52.6666667	1	49	49.6666667

	50	104	146	0.2	52	52	1.5	49	51.3333333
		106			52			51	
		145			52			50	
		149			51			52	
	100	144	242.333333	0.3	53	51.6666667	2	52	51.3333333
		226			51			51	
		249			51			52	
	200	252	307	0.4	53	53	2.5	51	51.6666667
		325			54			52	
		279			52			51	
			317					52	

	Ascorbic Acid			Oxalic Acid			Mannose		
	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
G3)	5	109	109	0.05	103	102.333333	0.5	103	106
		110			104			110	
		108			100			105	
	25	177	187.333333	0.1	103	104	1	100	100.333333
		188			106			98	
		197			103			103	
	50	265	257	0.2	106	106	1.5	100	103
		256			109			106	
		250			103			103	
	100	366	366.666667	0.3	103	103.666667	2	100	106.333333
		360			106			108	
		374			102			111	
	200	489	491.333333	0.4	102	102.333333	2.5	104	104.666667
		484			99			105	
		501			106			105	

Table S3. Sets of measurements performed during interference testing – normal range

values in mg/dL	Interference Testing - Normal Glucose Concentration Range								
	Ascorbic Acid			Oxalic Acid			Mannose		
(G1)	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
	5	180	179.333333	0.05	150	149.333333	0.5	149	148.333333
		172			148			148	
		186			150			148	
	25	239	244	0.1	139	139.333333	1	153	149.666667
		242			148			146	
		251			131			150	
	50	312	312.333333	0.2	171	174.666667	1.5	147	145
		312			175			143	
		313			178			145	
100	428	428.333333	0.3	163	171	2	149	148.666667	
	426			172			148		
	431			178			149		
200	err high	error high glucose	0.4	172	167.333333	2.5	154	153	
	err high			161			151		
	err high			169			154		

	Acorbic Acid			Oxalic Acid			Mannose		
(G2)	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
	5	115	114	0.05	122	115.333333	0.5	112	103.666667
		113			118			91	
		114			106			108	
25	152	150.666667	0.1	103	97.333333	1	110	109.333333	

Table S4. Sets of measurements performed during interference testing – hyperglycemic range

values in mg/dL	Interference Testing -Hyperglycemic Glucose Concentration Range								
	Ascorbic Acid			Oxalic Acid			Mannose		
(G1)	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
	5	300	306.666667	0.05	368	373.666667	0.5	349	351.666667
		311			374			349	
		309			379			357	
	25	310	312.666667	0.1	400	397.666667	1	293	282.666667
		317			400			281	
		311			393			274	
	50	304	304	0.2	403	402.666667	1.5	283	284.333333
		311			403			286	
		297			402			284	
100	311	305	0.3	372	372.666667	2	293	290.333333	
	301			373			288		
	303			373			290		
200	332	331.333333	0.4	398	404	2.5	290	289	
	334			404			285		
	328			410			292		

	Acorbic Acid			Oxalic Acid			Mannose		
(G2)	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
	5	err high	error high glucose	0.05	149	148.666667	0.5	144	141
		err high			149			137	
		err high			148			142	
25	err high		0.1	153	152.333333	1	140	141.333333	

		err high	error high glucose		155			142	
		err high			149			142	
	50	err high	error high glucose	0.2	149	150	1.5	122	116.333333
		err high			151			116	
		err high			150			111	
	100	err high	error high glucose	0.3	149	149.666667	2	151	156
		err high			142			154	
		err high			158			163	
	200	err high	error high glucose	0.4	161	159.333333	2.5	135	143
		err high			157			155	
		err high			160			139	

	Ascorbic Acid			Oxalic Acid			Mannose		
	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average	Conc. of interferent	Measured Value	Average
(G3)	5	290	317.333333	0.05	357	360.333333	0.5	358	356.333333
		314			365			360	
		348			359			351	
	25	337	348	0.1	378	368	1	339	329
		348			353			315	
		359			373			333	
	50	333	344	0.2	374	371.333333	1.5	317	315.666667
		355			368			327	
					372			303	
	100	358	338.666667	0.3	361	361	2	321	325.333333
		330			364			323	
		328			358			332	
	200	err high	error high glucose	0.4	355	362.333333	2.5	324	341.333333
		err high			361			345	
		err high			371			355	

Figure S1. Azorubine-buffered glucose solutions of different concentrations used for intrinsic accuracy testing of the glucometers

