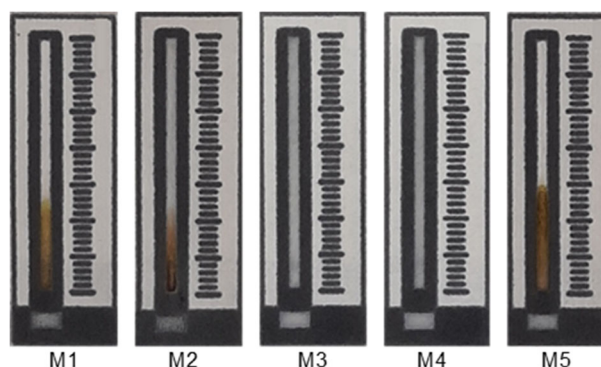
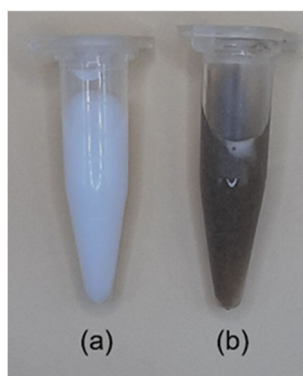


### Supplementary Data

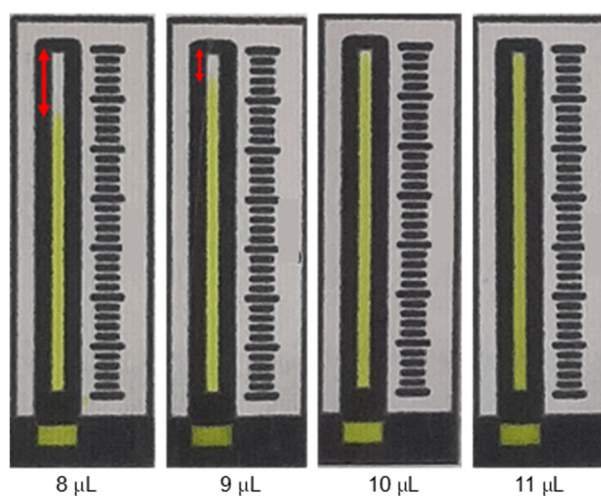
This supplementary data is a part of a paper entitled “Non-enzymatic Determination of Glucose in Artificial Urine Using 3D- $\mu$ PADs through Silver Nanoparticles Formation”.



**Fig S1.** Selection of reagents and sample sequence methods (M1–M5) for detection of glucose through the synthesis of AgNP on 3D- $\mu$ PADs. See Table 1 for synthesis detail



**Fig S2.** Effects of absence (a) and presence (b) of NaOH on AgNP synthesis



**Fig S3.** Color propagation test (0.04 M picric acid) to determine the range of sample zone volumes

**Table S1.** Composition of artificial urine solution

Components	Concentration (mM)
Citric acid	2
Urea	170
Uric acid	0.4
Lactic acid	1.1
Potassium dihydrogen phosphate	7
Dipotassium hydrogen phosphate	7
Sodium chloride	90
Sodium sulfate	10
Sodium bicarbonate	25
Ammonium chloride	25
Calcium chloride	2.5
Magnesium sulfate	2

**Table S2.** Results of wax penetration before and after fabrication of 3D- $\mu$ PADs

Replication	Detection zone (mm)			Sample zone (mm)			3D Connector (mm)											
	Before	After	$\Delta$	Before	After	$\Delta$	Before	After	$\Delta$	Before	After	$\Delta$	Before	After	$\Delta$			
																Length (mm)	Width (mm)	Length (mm)
1	35	34.190	<b>0.810</b>	2	1.960	<b>0.040</b>	4.68	4.170	<b>0.510</b>	2.8	2.590	<b>0.210</b>	7.83	6.800	<b>1.030</b>	2.8	2.700	<b>0.100</b>
2	35	34.060	<b>0.940</b>	2	1.600	<b>0.400</b>	4.68	4.240	<b>0.440</b>	2.8	2.590	<b>0.210</b>	7.83	7.020	<b>0.810</b>	2.8	2.140	<b>0.660</b>
3	35	34.120	<b>0.880</b>	2	1.580	<b>0.420</b>	4.68	4.150	<b>0.530</b>	2.8	2.590	<b>0.210</b>	7.83	7.040	<b>0.790</b>	2.8	2.150	<b>0.650</b>
4	35	34.190	<b>0.810</b>	2	1.610	<b>0.390</b>	4.68	4.040	<b>0.640</b>	2.8	2.280	<b>0.520</b>	7.83	7.020	<b>0.810</b>	2.8	2.620	<b>0.180</b>
5	35	34.010	<b>0.990</b>	2	1.910	<b>0.090</b>	4.68	4.160	<b>0.520</b>	2.8	2.240	<b>0.560</b>	7.83	6.880	<b>0.950</b>	2.8	2.010	<b>0.790</b>
6	35	34.020	<b>0.980</b>	2	1.640	<b>0.360</b>	4.68	4.200	<b>0.480</b>	2.8	2.100	<b>0.700</b>	7.83	7.520	<b>0.310</b>	2.8	2.290	<b>0.510</b>
Average		34.098	<b>0.902</b>		1.717	<b>0.283</b>		4.160	<b>0.520</b>		2.398	<b>0.402</b>		7.047	<b>0.783</b>		2.318	<b>0.482</b>
SD		0.081			0.171			0.067			0.218			0.251			0.280	
%RSD		0.237			9.959			1.616			9.102			3.557			12.088	

**Table S3.** Precision test of 100 mg/dL glucose measurement in artificial urine

Replication	Naked Eye	ImageJ
1	17	18.01
2	17	17.96
3	18	19.19
4	18	19.85
5	18	19.27
6	18	19.62
Average	17.7	18.98
SD	0.5	0.81
%RSD	2.9	4.27