

Supporting Information

Pressed Paper-Based Dipstick for Detection of Foodborne Pathogens with Multistep Reactions

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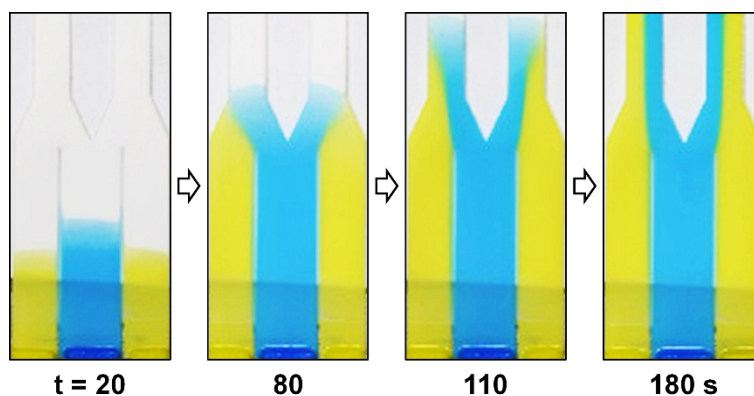


Figure S1. Flow demonstration of pressed paper-based dipstick. A pressed paper-based dipstick consists of three channels divided by two channel partitions; the left and right channels are partially pressed to cause a delay in fluid flow. As a result, blue fluid flowing through the center channel reaches the test line first, followed by delayed yellow fluid through the left and right channels.

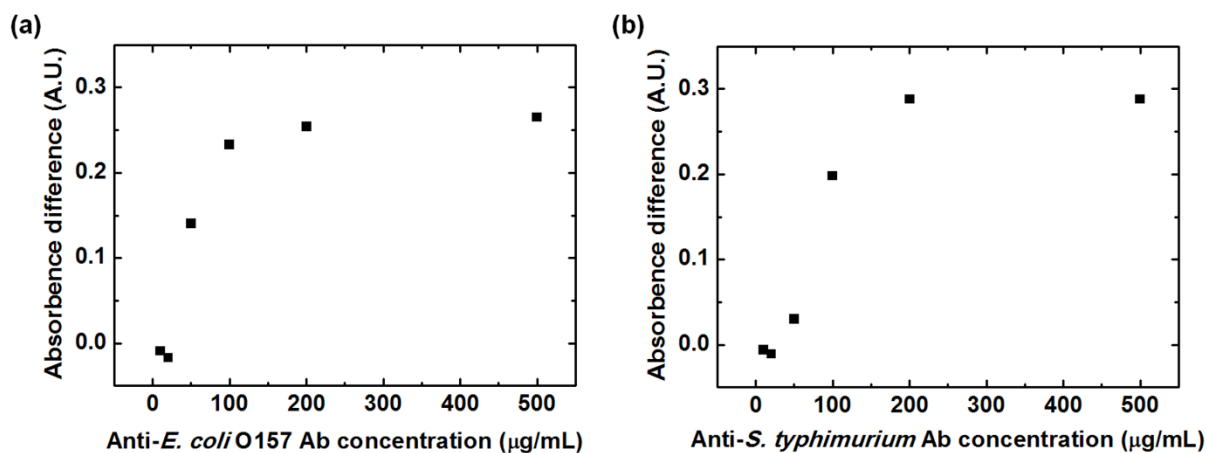


Figure S2. Results of gold aggregation test for (a) anti-*E. coli* O157 Ab and (b) anti-*S. typhimurium* Ab.

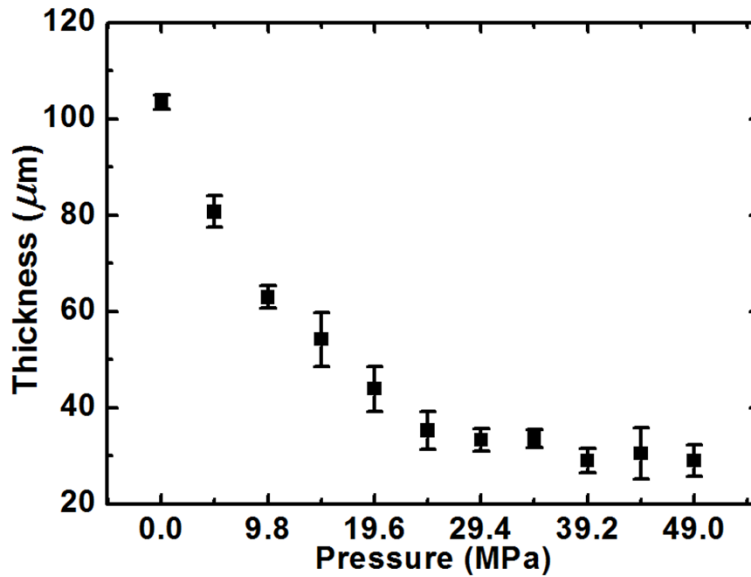


Figure S3. Thickness change of pressed nitrocellulose (NC) membrane strip as applied pressure increases.

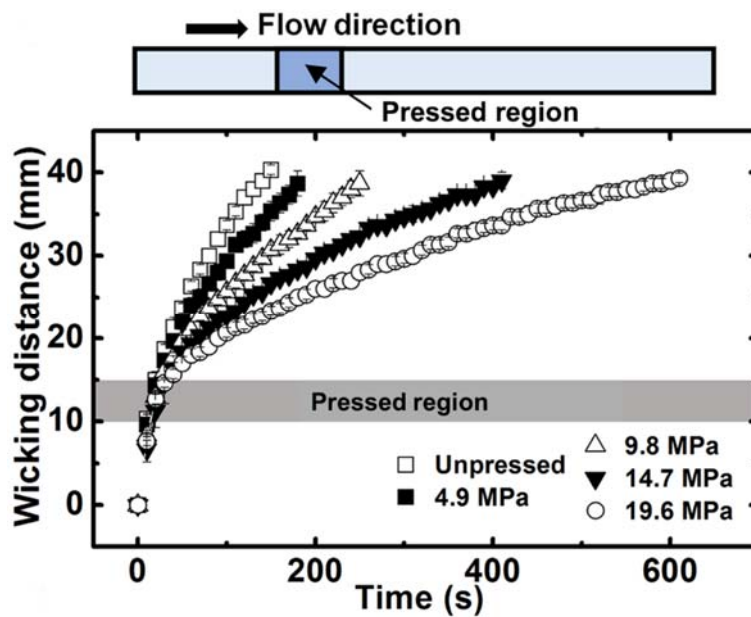


Figure S4. Experimental results for pressed NC membrane calibration curve. Fluid front was plotted versus time for all strips ($n = 3$).

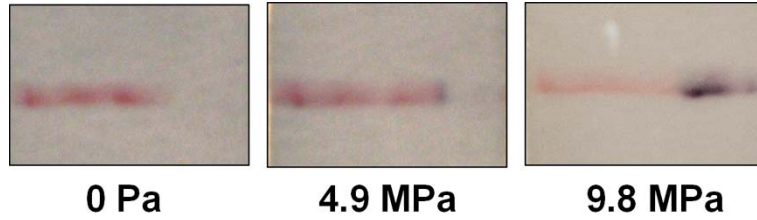


Figure S5. The picture of test line in pressed paper-based dipstick according to the applied pressure at the pressed region.

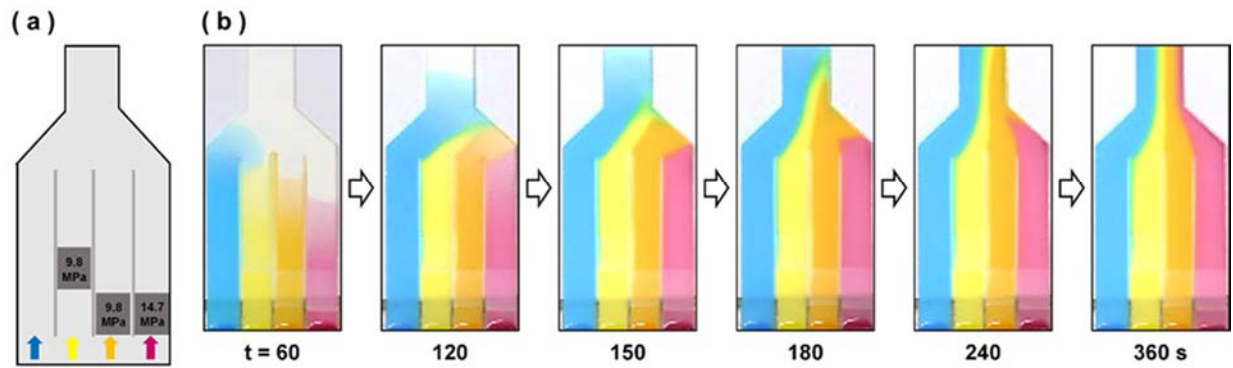


Figure S6. Differentiated fluid flow along each channel in four-partitioned NC membrane. **(a)** Experimental setup for sequential delivery of four kinds of food dyes. Each channel has different fluid flow developed by controlling the amount of pressure as well as the position of pressed region. **(b)** Time lapse images of visualized flow demonstration for sequential delivery with four kinds of food dyes.

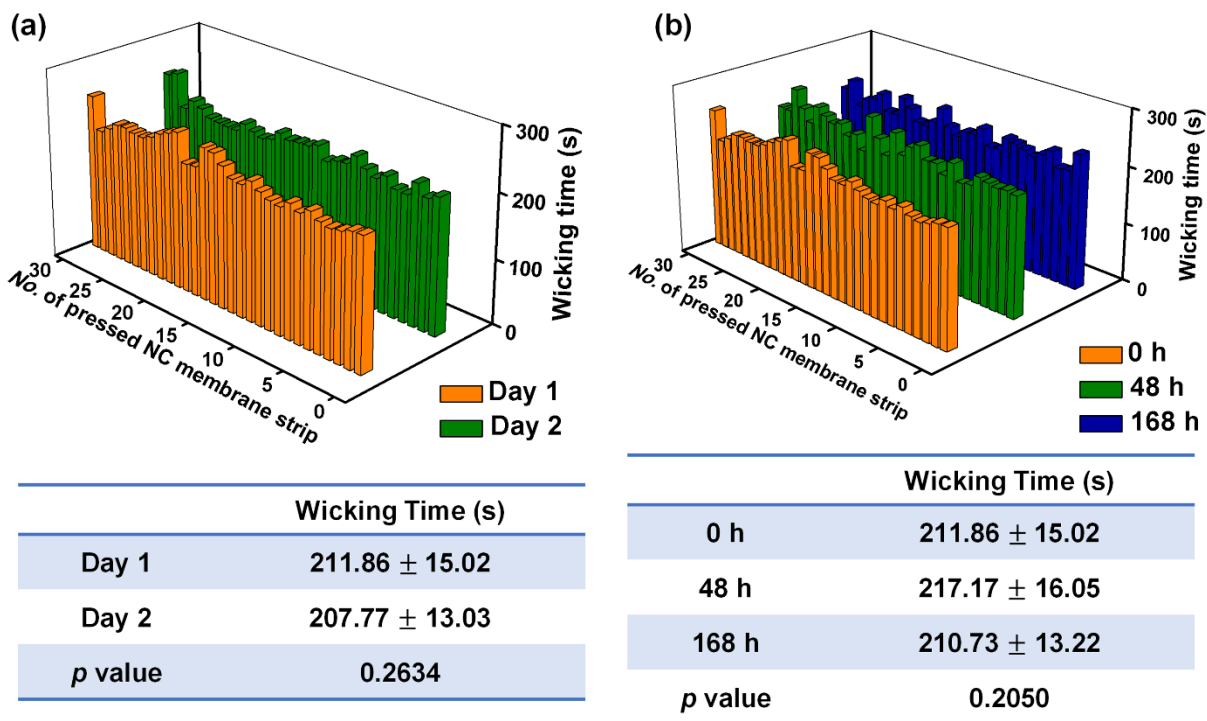


Figure S7. Repeatability test using pressed NC membrane strips. **(a)** Delayed fluid flows were measured in pressed NC membrane strips (pressed with 9.8 MPa) which were fabricated at different day and acquired from different region of NC membrane ($n = 30$). The result shows no statistically significant difference in average wicking time between two groups. Statistical analysis was conducted using Student's t test ($p < 0.05$ significance level). **(b)** Delayed fluid flows in pressed NC membrane strips (pressed with 9.8 MPa) were measured at different time after fabrication ($n = 30$). The result shows no statistically significant difference in average wicking time regardless of time after fabrication. One-way analysis of variance (ANOVA) was used for statistical analysis ($p < 0.05$ significance level).