

Figure S1. Chromatograms of organic acids **(a)**. standard: 1-oxalic Rt=2.94min; 2-malic Rt=3.15 min; 3-citric Rt=3.31 min; 4-succinic Rt=3.76 min; 5-fumaric Rt=4.18 min; **(B)**. Frozen apple; **(c)**. Lyophilized apple

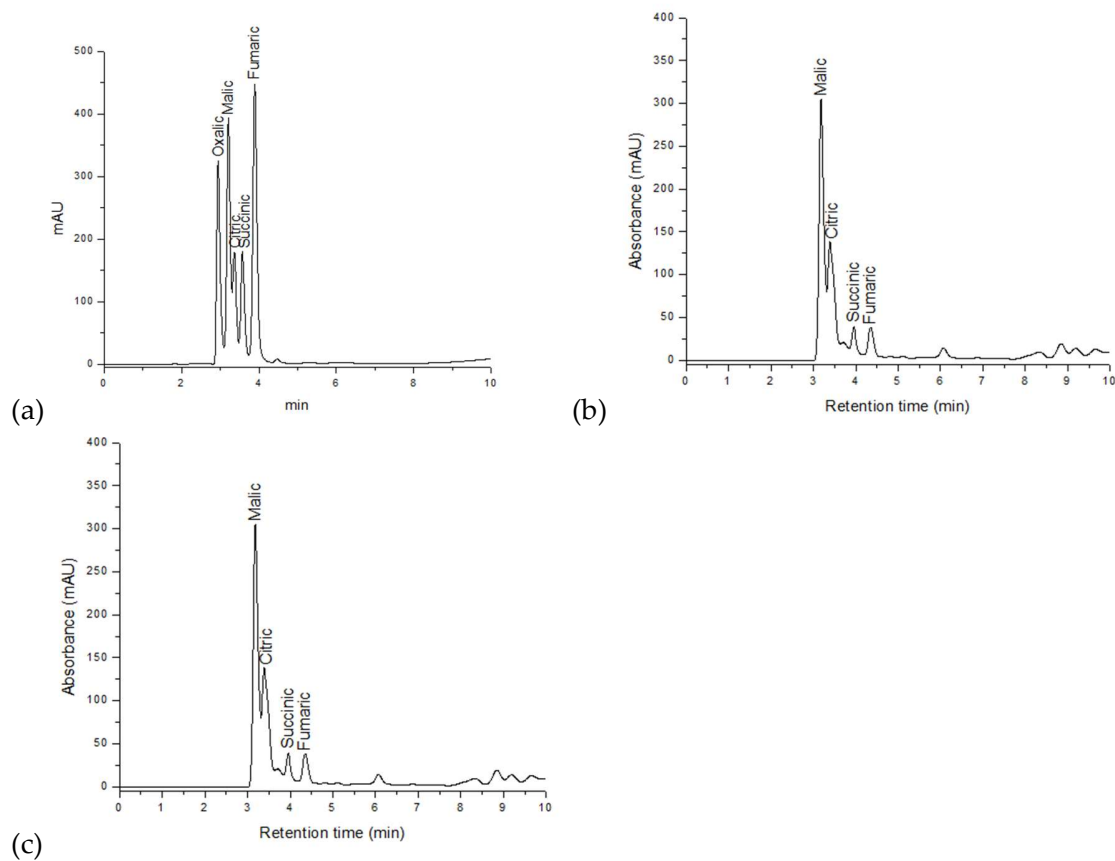
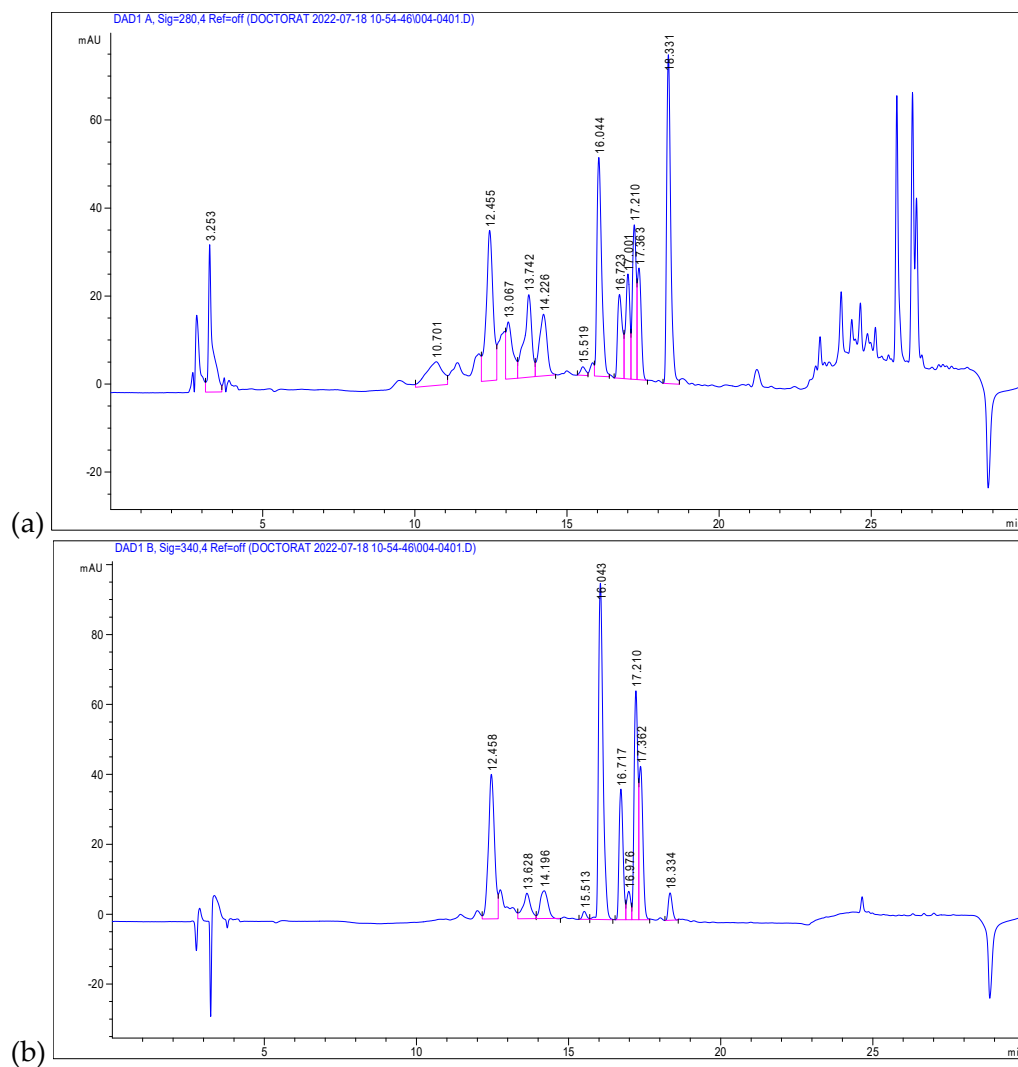
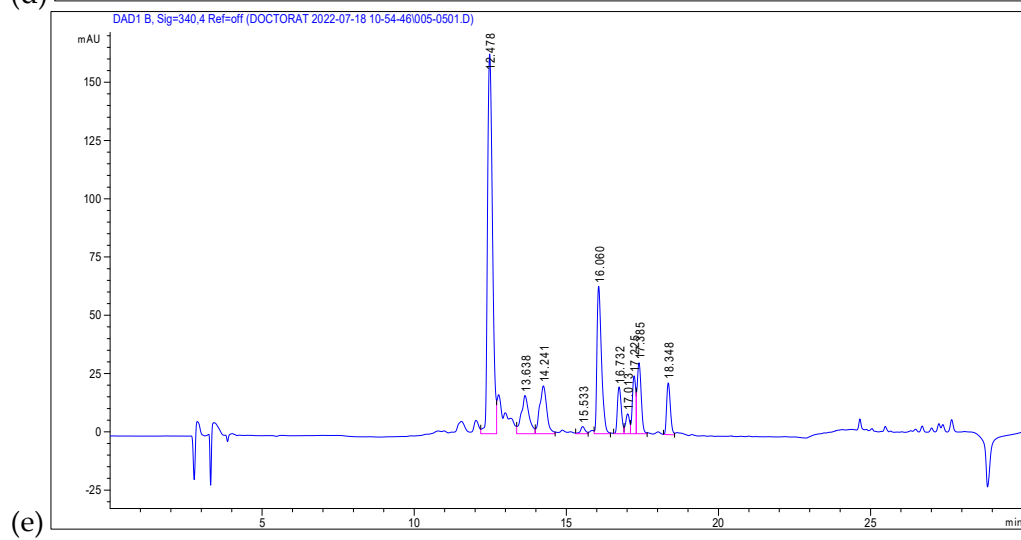
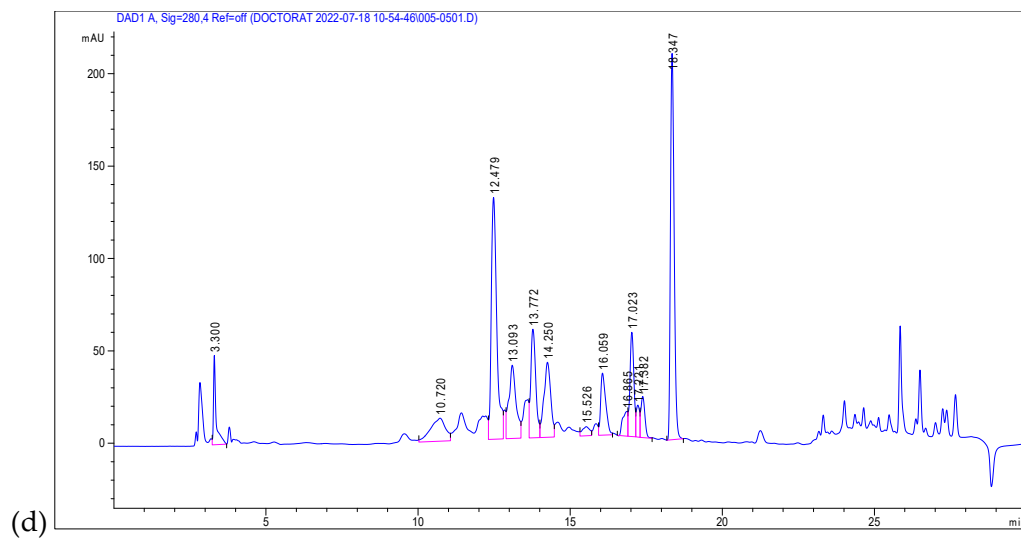
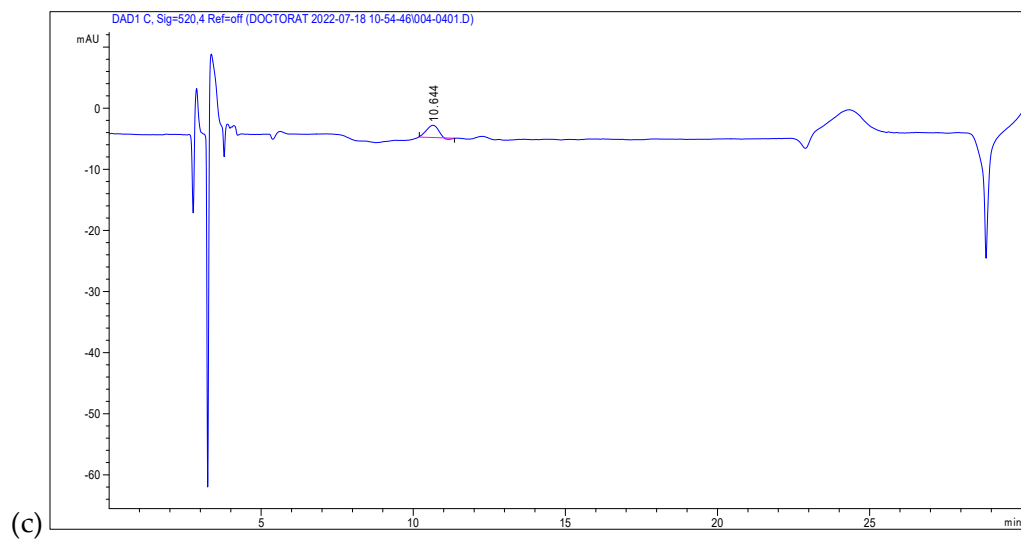


Figure S2. Chromatograms of phenolic compounds **(a)** Frozen apple - 280 nm, **(b)** Frozen apple - 340 nm; **(c)** Frozen apple - 520 nm; **(d)** Lyophilized apple - 280 nm; **(e)** Lyophilized apple - 340 nm; **(f)** Lyophilized apple - 520 nm





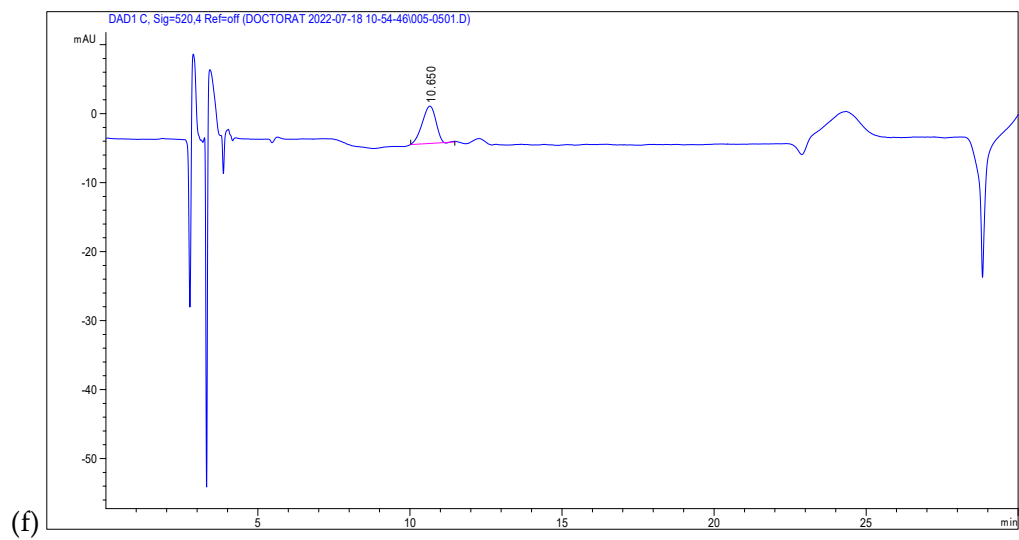


Table S1. Minimum inhibitory concentration against *E. coli*, *S. aureus*, *S. epidermidis*, *P. aeruginosa*, *E. faecalis*, *S. pyand* and *S. enterica*.

Gram (+) Bacteria						Gram (-) Bacteria	
Samples	<i>S. aureus</i>	<i>S. epidermidis</i>	<i>E. coli</i>	<i>E. faecalis</i>	<i>S. pyogenes</i>	<i>P. aeruginosa</i>	<i>S. enterica</i>
AP-PE	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.
FD-AP-PE	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.
AP-OE	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.
FD-AP-OE	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.
B-PE-PVA	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.
B-PE-PEC	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.
B-OE-PVA	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.
B-OE-PEC	n.b	n.b	n.b	n.b.	n.b	n.b	n.b.

AP-PE – Phenolic extract of frozen apple pomace, FD-AP-PE – Phenolic extract of freeze-dried apple pomace, AP-OE – Organic extract of frozen apple pomace, FD-AP-OE – Organic extract of freeze-dried apple pomace, B-PE-PVA – PVA biofilm with phenolic extract, B-PE-PEC – Pectin biofilm with phenolic extract, B-OE-PVA – PVA biofilm with organic extract, B-PE-PEC – Pectin biofilm with organic extract, n.b. – no bioactivity