Supplementary material

Cellular barriers in apple tissue regulate polyphenol release under different food processing and *in vitro* digestion conditions

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Table S1: Excitation and emission wavelengths of different stains

	Excitation wavelength used	Emission wavelength used
Calcofluor White M2R (CalFW)	405 nm	430 nm
Direct Red 23 (P4B)	555 nm	615 nm
Fluorescein diacetate (FDA)	488 nm	518 nm
Neutral Red (NR)	488 nm	590 nm
Naturstoff reagent A (NA)	488 nm	560 nm

Figure S1: Confocal images illustrating fresh apple sections incubated with FDA stain for 5 min (a), 10 min (b) and 20 min (c). The images show different levels of FDA uptake represented by the intensity of the green colour. After 20 min incubation, clear and intact outlines of apple cells could be observed. Black areas represent damaged cells with no FDA fluorescence at the edge of the sample (d).

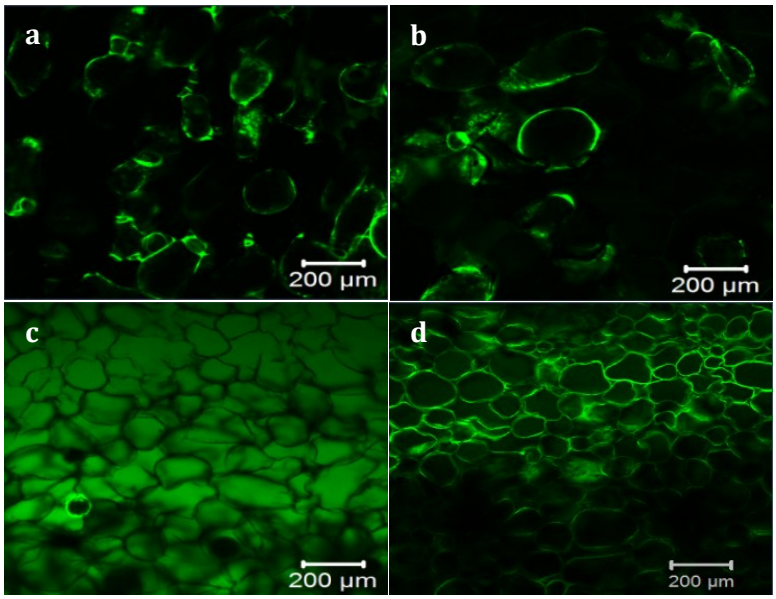

Figure S2: An identical apple tissue section observed without NA stain (a) and with NA stain (b) by confocal laser scanning microscopy. The fluorescence signal is significantly enhanced by NA (c), error bars represent standard deviation, n=5

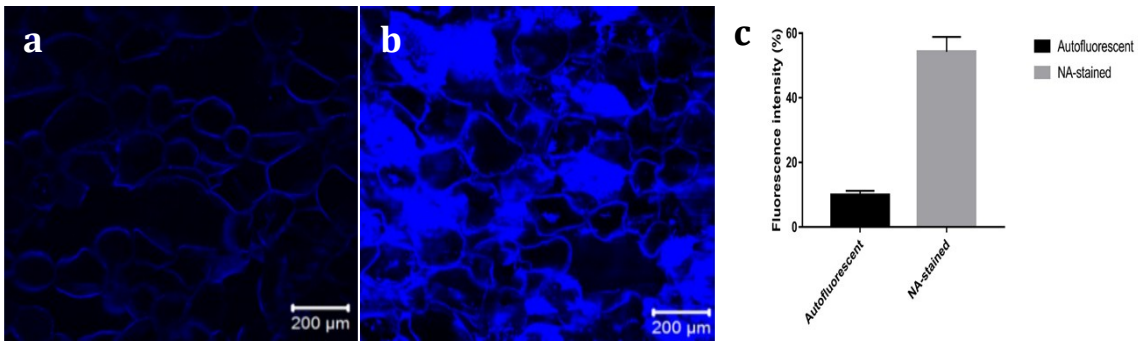

Figure S3: Samples with different thickness, 1 cm (A), 0.8 cm (B) and 0.5 cm (C) after treatment at pH 2 for 30 min. The sections were obtained from the middle of treated apple cubes and are stained with Neutral Red. The living and intact cells are stained in red. The core of the thinnest sample (C) shows a disruption of the vacuoles.