

Supplementary material

S1. Characterization of PeMA

Through $^1\text{H-NMR}$ analysis, the presence of new characteristic signals of MA, initially absent in the pure polymer, was confirmed. The two signals at 5.72 and 6.16 ppm are attributed to the methylene group in the vinyl bonds and the signal at 1.89 ppm is corresponding to the methyl group (Fig. 1B). The degree of methacrylate (DM) was calculated as previously described by [31], where it is defined as the ratio between the methyl ($-\text{CH}_3$) and methylene ($-\text{CH}_2$) groups of the methacrylate functionality introduced on the polymer chain and the pectin protons located in positions 3 (H_3) and 4 (H_4). This value was calculated by integrating the signals at 1.89 ppm (CH_3), 6.16 ppm (CH_2), 5.72 ppm (CH_2), 4.00 ppm (H_3), and 4.42 ppm (H_4) according to Eq. 3.

$$DM = \frac{\frac{I_{\text{Ha}} + I_{\text{HB}}}{2} + I_{\text{Hc}}}{I_{\text{H3}} + I_{\text{H4}}} \times 100 \quad (3)$$

The DM of PeMA calculated according to the Eq.3 is at 31%.

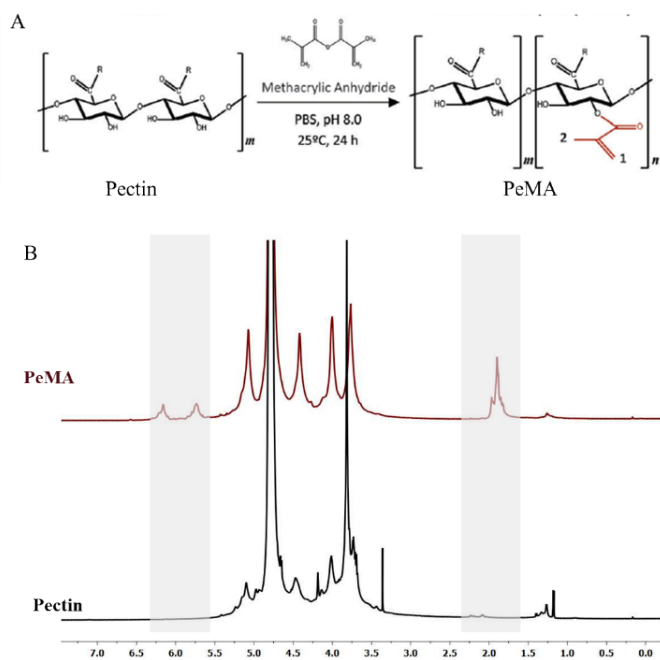


Fig S1. Chemical modification of pectin with methacrylate groups by reaction with MA. (B) $^1\text{H-NMR}$ spectra of unmodified pectin and pectin methacrylate (PeMA).