**Supporting Information file**

**FT-IR analysis**

Concisely, to investigate tensile and bending vibrations in PVA/PEO/CS and PVA/PEO/CS/*TG* nanofibers, these samples were mixed with KBr (spectroscopy grade, Sigma Aldrich) powder and compressed into tablets. The resulting mixture was then inserted into the FT-IR sample holder and compacted. Spectra were captured within the scanning range of 200–4000 cm-1 using a spectral resolution of 4 cm-1 through the FT-IR spectrophotometer (IR Prestige-21 Shimadzu Spectrometer, Kyoto, Japan).

The FT-IR spectra of PEO, CS, PVA, and optimal nanofiber containing PVA/PEO/CS with *TG* extract are shown in **Supplementary Figure 1**. In the case of PEO, the following stretching peaks were identified: C-C stretching vibrations (3386 cm−1), sp2 C‐H stretching vibrations (842.8 cm−1), C-O-C stretching frequency (1132.2 cm−1), C=C absorption band (1604.7 cm−1), C-O stretching frequency (1961.1 cm−1), C‐H stretching vibrations (2814.4 cm−1), CH2 weak stretching absorptions (2873.9 and 2927.2 cm−1), and finally O-H vibration (3414 cm−1). In addition, in the FT-IR spectrum of PEO, the bending vibrations of C-H (947.4 cm−1), C-O bending absorptions (1033.8, 1062.7, and 1109.6 cm−1), CH2 bending vibrations (1371.3 and 1427.3 cm−1), and eventually bending vibration of O-H (1591.2 cm-1) were characterized (Farea et al., 2020).

The main functional groups appearing in the IR spectrum of CS are as follows: bending vibrations of C-O at 993.3, 1026.13, and 1072.04 cm-1, stretching vibration of C-O-C at 1153.4 cm-1, bending vibration of C-N at 1217 cm-1, stretching vibration of C-H in 1421.5 cm-1, stretching vibrations of CH2-OH, CH-OH, and C-H in 1381, 1641.4, 2862.3 and 2916.4 cm-1, respectively. As the hydrogen bond is formed between the NH2 and the O-H groups in chitosan, the resulting stretching absorptions appear in the range of 3307.3 to 3464.1 cm-1 (Fernandes Queiroz et al., 2014).

In the FT-IR spectrum of PVA, the peak shown at 840.9 cm-1 was assigned to the symmetrical C-C stretching vibration. C-H bending vibration and C-O-C stretching vibration appeared at 947.4 and 1132.2 cm-1, respectively. Also, vibrations at 10333.8, 1062.7, and 1109 cm-1 were related to C-O bending vibrations. The peaks shown in 1371.3 and 1427.3 cm-1 were attributed to the bending vibrations of the CH2 group. The bending vibration and stretching vibration of O-H appeared in 1591.2 and 3332.9 cm-1, respectively. Besides, C=C and C=O stretching vibrations can also be seen in 1651.9 and 1732.0 cm-1, respectively (Uma Maheshwari et al., 2014).



**Supplementary Figure 1.** FT-IR spectra of polymers and polymer + extract, PEO, CS, and PVA.

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