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Electronic Supplementary Information

Chitosan and pectin core-shell beads encapsulating metformin-clay intercalation compounds for controlled delivery

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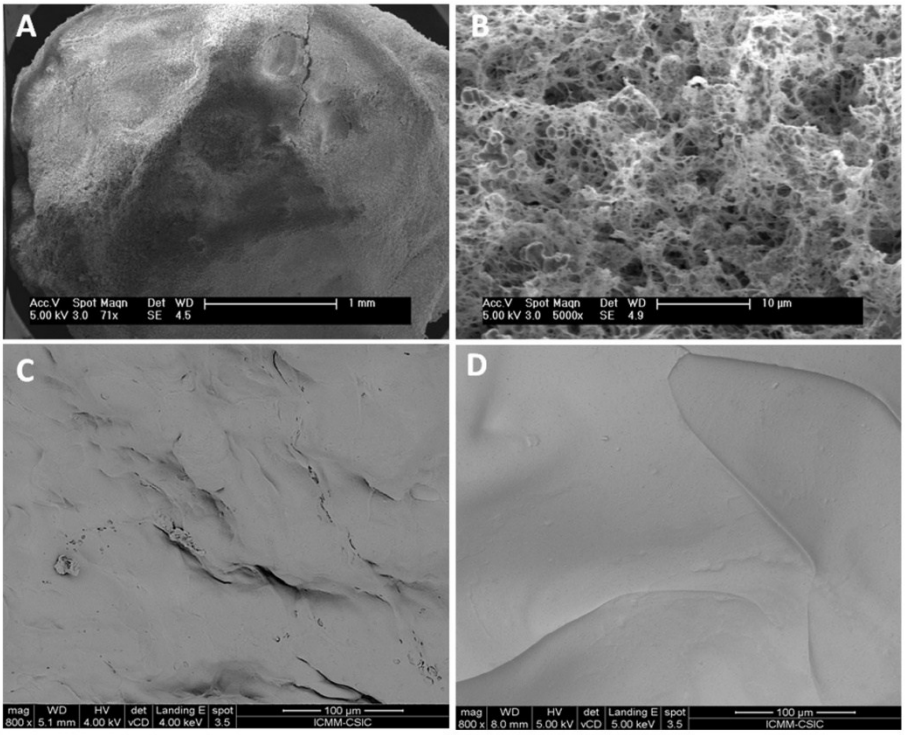

Fig. S1 FESEM images of the surface of PEC0.5%@CHT/Mt-MF (A-B), PEC/MF (C) and PEC/Mt-MFw (D) beads.

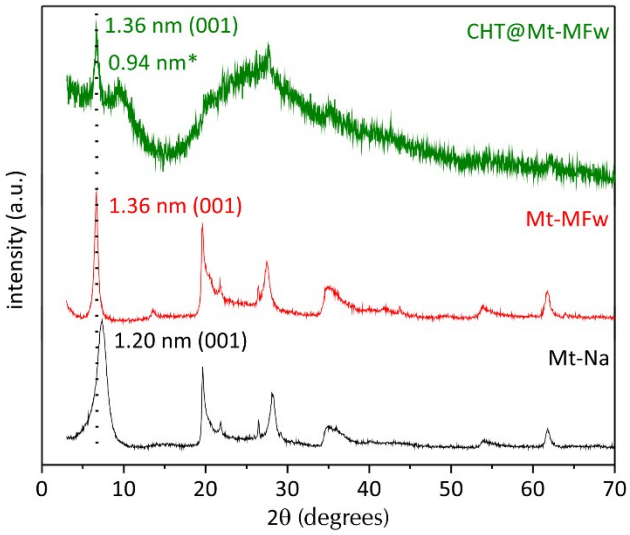

Fig. S2 XRD patterns of pristine Mt, Mt-MFw hybrid and CHT@Mt-MFw film. The * (0.94 nm *) refers to a chitosan peak.

Given that the relative content clay/biopolymer in the beads is quite small, it is difficult to clearly detect the XRD peaks of the inorganic solid, especially considering the clay particles are not well stacked when dispersed in the biopolymer matrix. Anyway, we have carried out experiments of preparation of bionanocomposites, e.g., metformin-montmorillonite dispersed in chitosan at the same concentration but processed as film and obtained the corresponding X-ray diffractogram. In this case, it is possible to confirm the presence of the XRD peaks ascribed to the intercalation compound at the same 2theta angles in the bionanocomposite film than in the hybrid alone. In addition, a peak at 9.4° (0.94 nm *) is observed, which may be related to the presence of chitosan. Based on this result we can assume the same behavior for the Laponite-based bionanocomposites but as the Laponite hybrids show *per se* a low crystallinity, its peaks could not be distinguishing in the diffractograms within the background scatter coming from the biopolymer matrix.

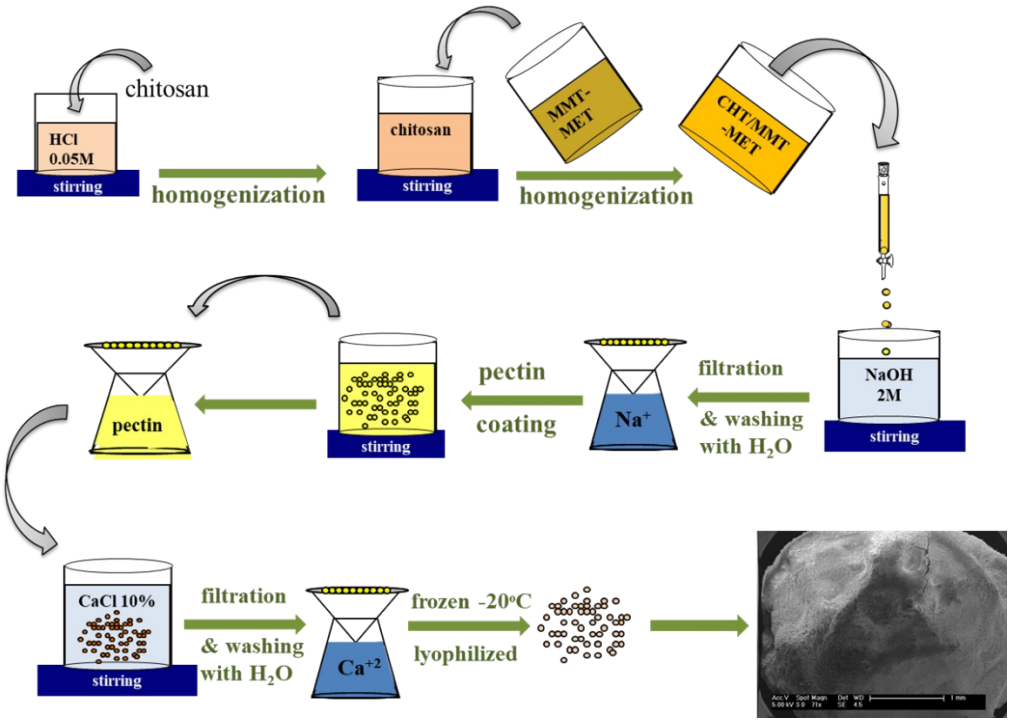

Fig. S3. Scheme of the general procedure used for the preparation of the chitosan-pectin beads entrapping the drug metformin, directly or incorporated in the hybrids prepared from montmorillonite or Laponite®.