Supplementary material

Swelling test

Swelling of polymer discs was additionally evaluated through the changes in axial thickness of hydrated test discs according to a previously described method with slight adaptations to the used equipment [1]. A texture analyser (TA.XTPlus with 5 kg load cell, Stable Micro Systems Ltd, Godalming, Surrey, UK) equipped with a tablet disintegration rig (A/TDR, Stable Micro Systems Ltd) was employed to determine changes in the swelling front of discs. Therefore test discs were attached to a probe possessing a grooved surface utilizing double-sided adhesive tape and lowered in a vessel containing 4 mL of artificial saliva until reaching an immersed perforated platform at a trigger force of 0.1 N. Being fixed between these grooved surfaces the geometry of the device allows the hydration of the test discs from all areas imitating physiological conditions in human oral cavity. For the determination of the expansion of polymer discs the displacement of the probe applying a force of 0.001 N was recorded over a test period of 10 minutes. Time-distance profiles were generated by means of Texture Exponent software (Version 6, Stable Micro Systems Ltd). The swelling index of mucoadhesive discs was calculated using the following equation:

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Swelling \ Index = \frac{T_t - T_0}{T_0} \times 100
\]

where \(T_t\) is the thickness of the test disc at time \(t\) and \(T_0\) is the initial thickness of the unhydrated disc. Results for the swelling index are displayed in Figure S 1.
Figure S1: Swelling index of test discs comprising HEC (●), CMC (○), CP (▼), PCP (▲), ALG (■) and XTGM (□) over the time. Studies were performed in artificial saliva pH 6.8 at room temperature. Indicated values are means of at least three experiments ± standard deviation.

References