Supplementary materials

**Manuscript Title:** “Hydrogel films based on chitosan and oxidized carboxymethylcellulose optimized for the controlled release of curcumin with applications in treating dermatological conditions”

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**Figure S1:**

**Figure S1:** Schematic representation of CMC’s oxidation reaction under the sodium periodate action.

**Figure S2:**

**Figure S2.** The structure of the hydrogel films based on chitosan and oxidized carboxymethyl cellulose - schematic presentation
**Figure S3.** Antioxidant activity determination expressed by IC50 values for the analyzed samples using the DPPH assay.

**Figure S4:**

![Graph showing absorbance vs. moles of chitosan amino groups/ml](image)

\[ y = 0.056x \]
\[ R^2 = 0.9992 \]

**Figure S4:** The CS calibration curve determined with ninhydrine test

**Figure S5**

![Graphs showing absorbance vs. curcumin concentration](image)

\[ y = 0.0167x \]
\[ R^2 = 0.999 \]

\[ y = 0.0079x \]
\[ R^2 = 0.9983 \]
Figure S5. Calibration curves of curcumin in ethanol (a), phosphate buffer at pH=7.4 (b), and acetate buffer at pH=5.5 (c)

Table S1. The CI values (%) for samples obtained by chemical cross-linking and physical interaction between CS and CMCOx, respectively, by the CS amino groups’ interaction with CMC’s carboxylic groups.

| Samples | Molar ratios | CI chemical cross-linking and physical interactions (%) | CI physical interactions (%) | CI chemical cross-linking and physical interactions - CI physical interactions = CI chemical cross-linking (Shiff base) (%) |
|---------|--------------|--------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| P1      | 0.25:1       | 42.27±0.1                                              | 16.47±2.5                  | 25.8                                                                                                                                 |
| P2      | 0.375:1      | 49.05±9.3                                              | 17.97±2.3                  | 31.08                                                                                                                                 |
| P3      | 0.5:1        | 61.83±7.3                                              | 23.89±3.7                  | 37.94                                                                                                                                 |