



Supporting Information

for

Development of a mucoadhesive drug delivery system and its interaction with gastric cells

Ahmet Baki Sahin, Serdar Karakurt and Deniz Sezlev Bilecen

Beilstein J. Nanotechnol. **2025**, *16*, 371–384. doi:10.3762/bjnano.16.28

Coating of alginate nanoparticles by Eudragit RS100 polymer

Coating of alginate nanoparticles with Eudragit RS100 polymer

To study the interaction of Eudragit RS100 polymer with alginate nanoparticles during coating, Eudragit RS100 polymer was labeled with rhodamine B isothiocyanate (Rh-Eud polymer; $\lambda_{\text{ex}} = 540 \text{ nm}$, $\lambda_{\text{em}} = 575 \text{ nm}$). To do this, Eudragit RS30D suspension (1 mL) was mixed with 20 μL rhodamine B isothiocyanate solution (10 mg/mL, Sigma, 283924) and incubated at room temperature on a magnetic stirrer (200 rpm, 3 h). At the end of incubation, the suspension was centrifuged (10000g, 10 min) and washed six times to remove the unbound rhodamine B. Then, alginate nanoparticles were prepared by using FITC-tagged alginate polymer following the procedure mentioned above to form F-Alg nanoparticles. Finally, the Rh-Eud polymer was used to coat F-Alg nanoparticles and Rh-Eud-F-Alg nanoparticles were synthesized. The interaction between Eudragit RS100 polymer and alginate nanoparticles were studied by measuring the fluorescence spectrum of particles in the range of 515–595 nm using the excitation wavelength of F-Alg ($\lambda_{\text{ex}} = 490 \text{ nm}$) (Figure S1). The emission spectrum of Rh-Eud polymer ($\lambda_{\text{ex}} = 530 \text{ nm}$) is provided in Figure S2.

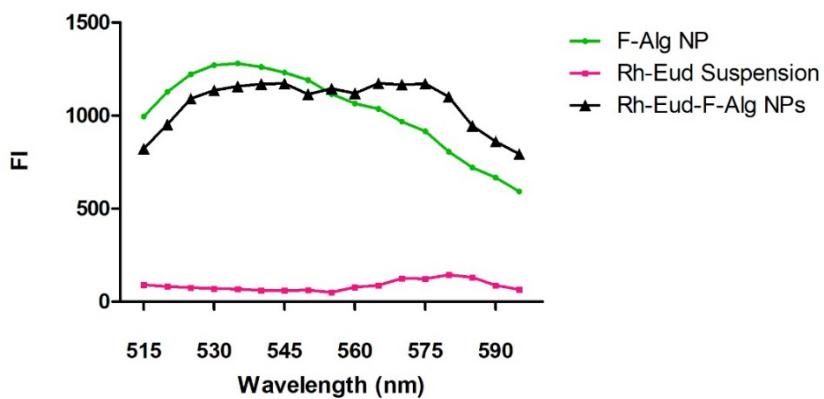


Figure S1: Fluorescence spectra of F-Alg NP, Rh-Eud suspension, and Rh-Eud-F-Alg NPs. A secondary peak was observed in the spectrum of Rh-Eud-F-Alg nanoparticles with $\lambda_{\text{ex}} = 490 \text{ nm}$, which may indicate the close interaction of Rh-Eud with F-Alg nanoparticles.

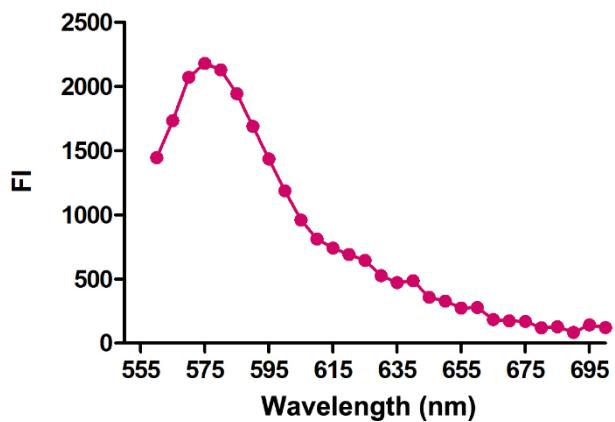


Figure S2: Fluorescence spectrum of Rh-Eud suspension with $\lambda_{\text{ex}} = 530$ nm. This supports that the emission obtained from F-Alg nanoparticles at 530 nm can excite the Rh-Eud polymer. The excitation of Rh-Eud polymer with 530 nm results in emission with λ_{em} at 575 nm.