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Polyelectrolyte Multilayer Microcapsules Containing Fluorescein Isothiocyanate- Concanavalin A/Glycogen Conjugates for Fluorometric Determination of Sugars

Katsuhiko Sato, Yoshihiro Endo and Jun-ichi Anzai*

Graduate School of Pharmaceutical Sciences, Tohoku University,
Aramaki, Aoba-ku, Sendai 980-8578, Japan

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Polyelectrolyte multilayer microcapsules were prepared by a layer-by-layer deposition of poly(ethyleneimine) (PEI) or poly(allylamine hydrochloride) (PAH) and poly(styrene sulfonate) (PSS) on a calcium carbonate particle containing fluorescein isothiocyanate-concanavalin A (FITC-Con A)/glycogen conjugates. Fluorescence microscope and scanning electron microscope observations revealed that the microcapsules thus prepared are spherical with a diameter of 3–5 μm . The fluorescence intensity of the microcapsules was enhanced upon addition of sugars, depending on the type of sugar and its concentration. The enhanced fluorescence intensity was rationalized by sugar-induced decomposition of the FITC-Con A/glycogen conjugates and resulting dequenching of the fluorescence of FITC-Con A. The capsule can be used repeatedly a few times after washing in buffer solution, although FITC-Con A leaked out of the capsules gradually.

*Corresponding author: e-mail: junanzai@mail.pharm.tohoku.ac.jp