Preparation and Characterization of Poly(ε-caprolactone) Microcapsules Containing Al_2O_3 and Indomethacin

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Indomethacin is a non-steroid anti-inflammatory drug used for its antipyretic and analgesic properties. In this study, the indomethacin release behaviors of the poly(ε-caprolactone) (PCL) microcapsules containing Al_2O_3 were investigated. The Al_2O_3 was chemically treated in 15 and 30 wt% hydrochloric acid and sodium hydroxide. And the PCL microcapsules containing indomethacin were confirmed using FT-IR. The inclusion of indomethacin into the PCL microcapsules was determined in the presence of indomethacin's specific peak, i.e., υN-H vibration at 1620 cm^{-1}. And the morphologies of the PCL microcapsules were observed with image analyzer and scanning electron microscope (SEM). As a result, the average particle size of the PCL microcapsules was decreased with the increase of the stirring rate. Also, the indomethacin's release behaviors of the PCL microcapsules were obtained with UV/vis spectra. It was found that in the case of using acidic treated Al_2O_3 the release rate of drug was increased while the adsorption capacity of indomethacin on Al_2O_3 was decreased due to the decreased specific surface area of Al_2O_3.