

## Novel pH-sensitive polyaspartamide nano-aggregates grafted with 1-(3-aminopropyl)imidazole for intracellular drug delivery application

서광원, 김덕준\*  
성균관대학교  
(djkim@skku.edu\*)

Novel pH-sensitive and biodegradable polyaspartamide derivatives were developed by simple grafting of 1-(3-aminopropyl)imidazole and/or O-(2-aminoethyl)-O'-methylpolyethylene glycol 5000 on PSI. The prepared polymers showed sharp pH-dependent phase transition around pH 7 by the protonation or unprotonation of the imidazole rings and had high buffering capacity between pH 5 and 7. For the MPEG/imidazole-g-polyaspartamides with the degree of substitution of 1-(3-aminopropyl)imidazole over 82%, the self aggregates associated with the hydrophobic interaction of the unprotonated imidazole groups were observed above pH 7, and their mean size was over 200 nm, while the aggregates of polymers were dissociated below pH 7 by protonation of imidazole groups. The pH-sensitive polyaspartamide derivatives are worth basic candidates for the intracellular drug delivery carriers triggered by small pH changes.