

AMPHIPHILIC POLY-N-VINYLPYRROLIDONES – PROMISING BASIS FOR NOVEL DRUG DELIVERY SYSTEMS

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Amphiphilic poly-N-vinylpyrrolidones were found to be perspective materials for creation of nano-scaled polymeric drug carriers. In this study, we developed the synthetic pathway for preparing amphiphilic poly-N-vinylpyrrolidones with different molecular weight of hydrophilic polymeric fragment and structure of end hydrophobic group. The influence of the hydrophilic/hydrophobic blocks structure on the process of nano-aggregate formation in aqueous media and on nano-carriers properties was investigated. It was found out that all synthesized amphiphilic polymers in aqueous solutions can spontaneously form spherical nano-scaled aggregates of different size at certain concentration values, determined by the structure of the polymer hydrophilic and hydrophobic fragments. Also new polymeric systems were developed, which allow obtaining of immobilized forms of several proteins and antifungal agents, including antibiotics. It was determined that aggregates of amphiphilic polymers with and without encapsulated biologically active substances were stable in the presence of blood serum. Higher activity and stability and lower toxicity of immobilized drugs forms in comparison with their non-immobilized analogues was determined.

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