The potential of protein A affinity precipitation as an alternative method for traditional antibody purification techniques was investigated. Recombinant produced protein A from Staphylococcus aureus (SpA) was covalently linked to the pH-responsive copolymer Eudragit® S-100 and used for purification of human immunoglobulin G (hIgG). The Eudragit-SpA conjugate had a static binding capacity of 93.9 ± 2.8 mg hIgG per g conjugate and a dissociation constant of 787 ± 67 nM at 7 ± 1 °C. The antibody was adsorbed rapidly onto Eudragit-SpA and reached equilibrium within 5 min. An excess of hIgG binding sites, provided by the conjugate, as well as adjusted elution conditions resulted in an appropriate hIgG purification performance. In summary, Eudragit-SpA was successfully applied to capture hIgG from a protein mixture with 65% antibody yield in the elution step. Nearly 96% purity and a purification factor of 12.4 were achieved. The Eudragit-SpA conjugate showed a stable ligand density over several cycles, which enabled reusability for repeated precipitation of hIgG. According to this, pH induced affinity precipitation can be seen as a potential alternative for protein A chromatography in antibody purification processes.

Stichworte: Antibody purification; Eudragit; Affinity precipitation; protein A; Immunoglobulin G