Silk fibroin (SF) is a protein synthetized by domesticated silkworm *Bombyx mori* and it has been studied as a promising biomaterial due to its properties of biocompatibility, biodegradability and minimum inflammatory. Controlled release is a promising field of application for SF membranes. SF molecules are composed of hydrophobic domains and little portions of positive and negative charged amino acids, and its isoelectric point is about pI = 4.5. Therefore, SF membrane is an amphoteric matrix and the release kinetics of charged compounds from SF matrices will strongly depend on the release medium, in terms of pH and ionic strength, as well as on the properties of the solute. Thus, it is relevant to study the behavior of SF, in solution and in solid state, in the presence of anionic and cationic compounds in various conditions of pH and ionic strength, in order to better understand and design future applications of SF as controlled release devices. The behavior of SF in the presence of methylene blue (MB) and rose bengal (RB) (model compounds positively and negatively charged, respectively) was studied in pH of 3, 4 and 7 and ionic strength of 0, 250 and 500 mmol/L, in terms of zeta potential and release kinetics. Zeta potential analysis indicated a net positive charge in pH 3, a net negative charge in pH 7 and a near neutral charge in pH 4. It is expected that the release kinetics experiments will elucidate the influence of the medium on the release profile of MB and RB: higher pH values (above pI) implies in a negative net charge of the fibroin membrane and a weaker interaction between SF and RB, facilitating its release. On the other hand, lower pH (under pI) values imply in a positive net charge, facilitating the release of RB the medium.

**Keywords:** biomacromolecules, charged compounds, release kinetics

**References:**


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