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Thiolated poly(Aspartic acid) polymers in ophthalmic therapy

Gabriella Horvat¹, Benjamin Gyarmati², Szilvia Berko¹, Piroska Szabo-Revesz¹, Barnabas Aron Szilagyi², Andras Szilagyi², Judit Soos¹, Giuseppina Sandri³, Maria Cristina Bonferoni³, Carla Caramella³, Erzsebet Csanyi¹ and Maria Budai-Szucs¹

¹University of Szeged, Hungary

²Budapest University of Technology and Economics, Hungary

³University of Pavia, Italy

With the aging of the population, the need for treatments for ocular diseases and disorders has become more important than ever. If we aim to maintain the quality of life for this aging population, the preservation of vision is critical. Since topical ocular delivery treatments are considered to be the safest, least invasive, and most self-administrable, their development is highly sought. Unfortunately, the application of formulations available on the market have many disadvantages such as the need for frequent instillation of eye drops, which is accompanied by discomfort and a decrease in patient compliance, especially in long-term therapy. One way to overcome these drawbacks is to formulate a drug delivery system with mucoadhesive properties leading to the increase of residence time of the drug on the ocular surface, drug uptake, diffusion and transport, while the concentration, required volume and usage frequency can be decreased.

The aim of our work was to determine the properties of thiolated poly(aspartic acid) (ThioPASP) polymers as potential in situ gelling, mucoadhesive ophthalmic drug delivery system. Mucoadhesion measurements were performed *in vitro* (rheology, tensile test) and *ex vivo* (tensile test, “wash away” test). The release of sodium diclofenac, a frequently used non-steroidal anti-inflammatory drug with low bioavailability, from the gels was also determined.

According to all results ThioPASP polymers can serve as potential ocular mucoadhesive drug delivery systems with an appropriate drug release profile whereby the administration frequency can be decreased and the patient compliance might be increased.

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Biography

Gabriella Horvat is a PhD student at the University of Szeged, in the Department of Pharmaceutical Technology. Her research work is on the subject of mucoadhesive polymers, especially thiolated polymers and hyaluronic acid derivatives. The target of these mucoadhesive polymers is the eye in order to increase the low bioavailability of the ophthalmic preparations. During her PhD studies she has spent four months in Italy at the University of Pavia, in the Department of Drug Sciences to gain experience on the subject of mucoadhesion. Her works were presented on domestic and international conferences.

gabriella.horvat@pharm.u-szeged.hu