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## Enhanced mucoadhesive effects of pre-activated low molecular weight poly(acrylic acid) in combination with polycarbophil-cysteine conjugate

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The aim of this study was to synthesize pre-activated low molecular weight of poly(acrylic acid) (2, 6 and 15 kDa) and to L investigate their enhanced mucoadhesive effects in combination with polycarbophil-cysteine conjugate (PCP-cys). PCPcys is highly mucoadhesive owing to its free thiol groups, but its high molecular weight (approx. 3.5×109g/mol) and its crosslinked structure may spatially hinder its interaction with mucus. Pre-activated poly(acrylic acids) are thiolated poly(acrylic acid) (PAA-cys) with their free thiol groups further conjugated with 2-mercaptonicotinic acid via disulfide bonds (PAA-cys-MNA). Pre-activated thiomers are the latest generation of mucoadhesive polymers developed by our research group and the lowest low molecular weight PAAs were chosen for this study because of their high chain mobility. The enhanced mucoadhesive effects were studied with rheological measurements of mixtures of PAA-cys-MNA and PCP-cys with purified porcine mucus. The results showed that pre-activated PAAs increased the dynamic viscosity of the mixtures of PAA-cys-MNA/PCP-cys/mucus by 3.5-, 5.6-, and 5.1-fold (respectively for PAA 2, 6, 15 kDa) compared to the mixtures of unmodified PAAs/PCP-cys/mucus. This finding suggests that the presence of low molecular weight and high chain mobility of pre-activated PAAs could serve as a "cross-linker" to facilitate the formation of disulfide bonds and in situ cross-linking process between PCP-cys and mucus gel and therefore increased mucoadhesion.

## **Biography**

Hung Lam is currently pursuing his PhD at Department of Pharmaceutical Technology, Faculty of Pharmacy, University of Innsbruck, Austria. He is working on thiomers and pre-activated thiomers. He has published 3 papers in reputed journals on pharmaceutical sciences.

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