

# ABSTRACT

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Title of diploma thesis:

Rheological and adhesive properties of matrix for freeze-dried oral vaccines

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The aim of the diploma thesis was to evaluate the rheological and adhesive properties of formulations for lyophilized oral vaccines and lyophilized tablets formulated on the basis of dextran, iota-carrageenan or trehalose. The theoretical part characterizes dosage forms for application to the oral cavity, lyophilized preparations and excipients for mucoadhesive preparations. In the experimental part, rheological and mucoadhesive properties on a rotary rheometer were evaluated. Formulations containing iota-carrageenan showed higher viscosity, higher gel stiffness, lower degree of relaxation and higher yield stress than trehalose formulations. All lyophilized tablets showed sufficient adhesion to a standardized mucin support *in vitro*. The performed experiments represent pilot tests of flow, viscoelastic and mucoadhesive properties of lyophilized tablets for oral administration of pertussis vaccine. The contribution of the work is the design of a testing methodology for the final formulations during stability tests.

**Key words:** lyophilized tablets, viscoelasticity, mucoadhesion, dextran, iota-carrageenan

