1 ABSTRACT

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Title of Rigorous Thesis	**Rheological properties of gels**

This thesis deals with evaluation of rheological and adhesion properties of the gels using rotational rheometer. The theoretical part outlines the characterization of gels and their rheological properties, and there is brief information on scars and their treatment options. The principles of the rotational, oscillation, and adhesive tests carried out in the experimental section are also listed. The commercial gels with different composition, type and place of application (Fenistil gel, Voltaren Forte gel, Nexcare gel, Vidisic gel, Strataderm) as well as two newly formulated scar healing gels were evaluated. The results of the rotation tests reveal that the gels with high consistency show the bigger viscosity decrease in comparison to the gels with lower consistency. The oscillation tests are more suitable as the samples are less exposed to a stress. The relaxation strength K* and relaxation exponent n* are the exact characteristics of rheological behaviour of the gels. Only the Nexcare a Scar treatment gel B showed a low relaxation strength and at the same time the low relaxation exponent. Voltaren forte have had the highest adhesive force, and Nexcare gel the lowest one. The results of the adhesive tests ate in correlation with the results of the rotational and oscillations tests. Gels exhibiting high consistency and stiffness also have high adhesion. The rheological property of the original Strataderm is an equivalent sample labeled Scar treatment gel A.

Keywords: gels, viscoelasticity, adhesion, scars, rheometry