Abstract

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Title of Thesis: ***Permeation of nanoparticles through sublingual membrane 3.***

In the theoretical part, attention was paid to the entry of drugs into the body by the sublingual route, description of the oral cavity (mucosa, epithelium, mucus, saliva, MCGs), OCCAT model, and basic concepts of bioimpedance.

In the experimental part, the hydrodynamic size of the PD-Chromeon 470 nanoparticles was verified by the DLS method. In the environment of water, even two buffers pH 6.8 and 7.4 according to Sörensen, practically identical results were obtained at the level of 40 nm. Buffers were used as donor, resp. acceptor phase *in vitro* permeation experiments. The experiments included measurement of impedances of differently processed and stored sublingual membranes from pig tongue. To test the penetration of nanoparticles through these model mucosal barriers, nanoparticles were applied in a concentrated (500 µg / ml), diluted (1: 4) dispersion.

The lowest impedance had the sodium azide-preserved membranes, which were frozen at -18 ° C for a long time. These also showed the highest in vitro permeation values of nanoparticles. Rapid freezing with liquid nitrogen does not seem to affect the membrane in terms of impedance values.

PD-Chromeon 470 nanoparticles were able to penetrate all differently processed sublingual membranes. The highest impedance values and the lowest permeation values for nanoparticles were measured for freshly prepared membranes or membranes after preparation rapidly frozen with liquid nitrogen and stored at -18 ° C for one week. Both thus obtained sublingual membranes can be equally used for *in vitro* permeation experiments.

Key words: Anatomy and physiology of oral cavity, sublingual permeation, OCCAT model, Chromeon 470, transmembrane *in vitro* impedance, transmembrane permeation of nanoparticles