

ABSTRACT

Charles University in Prague

Faculty of Pharmacy in Hradec Králové

Department of Inorganic & Organic Chemistry

Student: Tereza Dvořáková

Title of diploma thesis: EVALUATION OF THE IN VITRO SKIN PERMEATION OF SELECTED COMPOUNDS USING STATIC FRANZ DIFFUSION CELLS

The work focuses testing the transdermal permeation of selected substances - tacrine and 7-methoxytacrine (7-Meota). Tacrine is an acetylcholinesterase inhibitor approved for the treatment of Alzheimer's disease. For its hepatotoxicity and side-effects is no longer used today. Transdermal administration could be a good alternative to reduce those side effects. 7-Meota is tacrine derivative, which in previous *in vitro* testing demonstrated lower toxicity in comparison with tacrine.

The aim of this thesis was to clarify if and to what extent has tacrine and 7-Meota ability for transdermal permeation.

Experiments were performed *in vitro* by using Franz diffusions cells. As receptor fluid was used for tacrine a phosphate buffer solution and for 7-Meota was a phosphate buffer solution for one part of the trial and for a second part was water. Substances were applied in an infinite dose in aqueous solution onto the surface of pig skin, which was cut to a thickness of 500 μm and 1000 μm . For the comparison was part of the experiments conducted in a closed configuration with paraffin film on the part of the donor and part uncovered. Permeation profiles have been created for both substances and provided for distribution to distinguishing individual skin layers. The results were compared with previously monitored standard substance caffeine.

Tacrine and 7-Meota pointed the relatively low ability to self permeation into the receptor fluid. The highest concentration of the substances was determined in the part of stratum corneum.