

CHARLES UNIVERSITY IN PRAGUE
2nd FACULTY OF MEDICINE
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DEAN'S OFFICE

EVALUATION OF A DOCTORIAL DISSERTATION
DOCTORIAL STUDY PROGRAM IN BIOMEDICINE

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Honored to be requested to evaluate the doctoral dissertation by Ing. Čestmír Čejka on
“Physical factors influencing the development of corneal damage by UV rays”
my objective and critical analysis on the material at my disposal

- Thesis (Physical factors influencing the development of corneal damage of the rabbit eye with UV rays) of 65 pages, with References, Papers in extensor related to the Thesis and Papers in extensor not related to the Theses, and

-Autoreferát disertační práce, of 23 pages

-The original publications the Thesis is based on

is the following:

The topicality of the resolved subject, the methods and procedures used are update, scientifically valuable and indirectly united to the vast task of public healthcare to prevent environmental health risks of UV radiation. Of the six original publications Čestmír Čejka is the first author, and five of them are published in international peer review journals with total IF of almost 10 (9.708). In addition 12 papers with high IFs but not related to the Thesis and dealing with histochemistry and pharmacology of the eye with Čestmír Čejka as coworker have been listed.

Department of Eye Histochemistry and Pharmacology, Institute of Experimental Medicine of the Academy of Sciences of the Czech Republic has been the main working place of the first author. The mentioned (and its predecessors), is one of the leading global centers for research of histochemistry and pharmacology of the eye. Since 1965 the peer reviewed papers listed in PubMed of Docent Jitka Cejkova and her team reached the number of more than 100. Most of her works has been devoted to the histochemistry of the cornea. As experimental conditions, UV radiation and the cornea, and to lesser extent, the lens and conjunctiva were first applied in 1994.

Ing. Čestmír Čejka has been a member of her team as student, coworker and co-publisher since 2004 in 16 papers of which in 6 as the first author. Of other remarkable contemporary authors on the cornea and UV radiation has to be mentioned teams lead by Drs. Ringvold in Norway, Podskochy in Sweden, Meek in the United Kingdom, and Dr. Kolozsvari in Hungary. All these authors have been referred and their results discussed in the publications which are the basis of the Thesis. Later, the mentioned scientists and teams, have been mentioned as members of leading edge centers for refractive corneal surgery – using UV range excimer lasers. As an exception, Docent Cejkova's team continued experimental, academic studies.

The results published in the papers and summarized in the Thesis are novel scientific findings. Without going to more detailed physical factors the main results and conclusions of the Thesis are:

Results show that the repeated irradiation of the rabbit cornea with UVB rays significantly increases the value of absorbance A over the whole measurable wavelength λ , whereas the repeated irradiation with UVA rays does not bring significant changes in absorbance A.

The presentation of the results of the research together with the discussion in the Thesis – not in the original publications - make the interpretation of laborious. As an example I would like to mention

from (citation)

“3. Results and Discussion

3.5. (page 33) **The protective effect of actinoquinol/hyaluronic acid (UV filter) on corneal hydration and light absorption (Paper 5).**

The examination of UV filter on the normal cornea (corneal thickness, hydration and spectrophotometry in UV region) and in UVB irradiated model of the rabbit cornea (corneal thickness, hydration and spectrophotometry in UV region)”

The fact that the text is only one sentence for the whole chapter and followed by 18 figures and tables with abundant text makes the interpretation of the results and discussion most time consuming and difficult. The candidate has been in a too great hurry when putting the Thesis together! However, this failure is corrected in the Autoreferat (Chapter 5. Discussion) and the publication number 5 of the Thesis has in-depth Discussion based on the Results. As a whole the candidate’s interpretation of the results and conclusions are reasonable and base of the evidence presented. The bibliography is comprehensive and up-to-date.

During the *v i v a v o c e* examination the candidate provided sufficient explanation to my question of Global Solar UV Index and of the administrative control of occupational exposure of UV from artificial sources, and of their integration to public health approach in the Czech Republic.

As an opponent for the dissertation by Ing. Čestmír Čejka on “Physical factors influencing the development of corneal damage by UV rays” I explicitly state that the mentioned dissertation demonstrates that the author has the prerequisites for independent creative research and I express my recommendations concerning the granting of the “Ph.D” title.

Tampere, November 18, 2011

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