

Purpose: The purpose of the Thesis „Physical factors influencing the development of corneal damage by UV rays“ was a) to determine the light absorption properties in the rabbit cornea irradiated with UVB rays by measuring of physical values of absorbance A and transmittance T as functions of wavelength ; b) To investigate the absorption coefficient as a function of wavelength ; c) To evaluate the importance of this coefficient for corneal light absorption properties; d) To determine the light absorption properties in the rabbit cornea irradiated with UVA by measuring of physical values of absorbance A and transmittance T as functions of wavelength (to compare the effect of UVA with UVB rays).

Material and Methods: To achieve individual aims, the new spectrophotometrical method was developed and following experiments were performed: a) Repeated irradiation of the rabbit cornea with UVB rays (daily dose 1.01 J/cm<sup>2</sup> during 5 days); b) Repeated irradiation of the rabbit cornea with UVA rays (daily dose 1.01 J/cm<sup>2</sup> or 2.02 J/cm<sup>2</sup>) during five days; c) Repeated irradiation of the rabbit cornea with the daily dose of 1.01 J/cm<sup>2</sup> during 4 days and in individual time intervals investigation of corneal light absorption and hydration changes; d) The anti-UV efficacy of UV filter (actinoquinol combined with hyaluronic acid, Laboratoires Thea, Clermont-Ferrand, France). In this study the rabbit corneas were irradiated with different daily doses of UVB rays (0.5 J/cm<sup>2</sup>, 1.01 J/cm<sup>2</sup>) during four days. During irradiation UV filter was dropped on the right eye, and buffered saline on the left eye; e) Irradiation of the rabbit cornea with UVB rays equivalent to 2.5 and 5 hrs exposure of the human cornea to UVB rays from sunlight. In all above mentioned experiments corneal hydration was measured using Pachymeter and after the end of experiments the corneas were examined spectrophotometrically using the method which we developed.