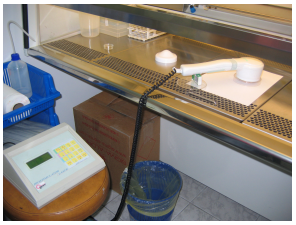
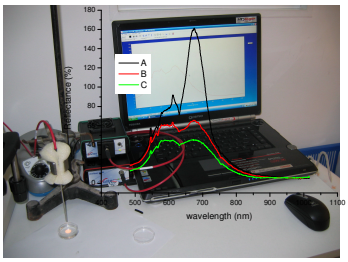
CONTRACT CEEX 66/2005 - FOTOLAS

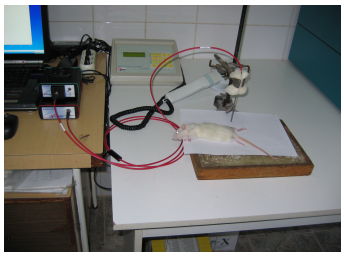
Rezultate semnificative:



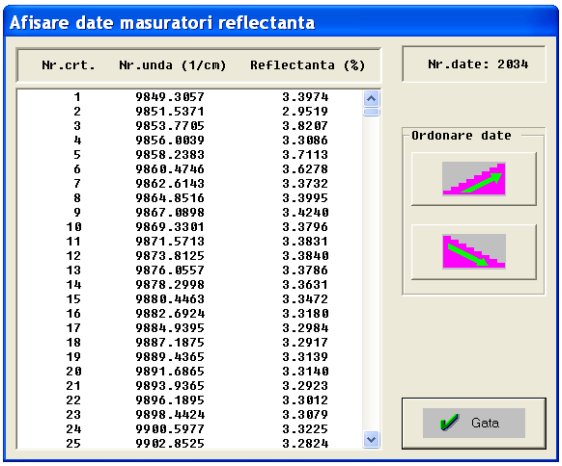
- ✓ Studiul efectelor citotoxice si genotoxice ale radiatiei laser asupra culturilor de celule;



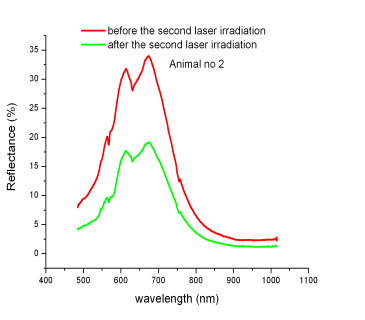
- ✓ Studiul schimbarilor functionale induse de catre radiatia laser la nivel celulara, identificarea tintelor specifice ale actiunii radiatii laser cu impact asupra functionalitatii celulare (capacitatea de proliferare generarea speciilor oxigen-reactive, activitati enzimatice) folosind spectroscopia de reflexie difuza;



- ✓ Ttranspunerea metodei de iradiere de la nivel celular la model animal : predimensionarea parametrilor de expunere la radiatia laser pentru a aplica studiul la un model animal experimental.



Nr.crt.	Nr.unda (1/cm)	Reflectanta (%)
1	9849.3057	3.3974
2	9851.5371	2.9519
3	9853.7705	3.8207
4	9856.0039	3.3086
5	9858.2383	3.7113
6	9860.4746	3.6278
7	9862.6143	3.3732
8	9864.8516	3.3995
9	9867.0898	3.4240
10	9869.3301	3.3796
11	9871.5713	3.3831
12	9873.8125	3.3840
13	9876.0557	3.3786
14	9878.2998	3.3631
15	9880.4463	3.3472
16	9882.6924	3.3180
17	9884.9395	3.2984
18	9887.1875	3.2917
19	9889.4365	3.3139
20	9891.6865	3.3140
21	9893.9365	3.2923
22	9896.1895	3.3012
23	9898.4424	3.3079
24	9900.5977	3.3225
25	9902.8525	3.2824



- ✓ Stabilirea parametrilor optimi ai iradierii laser si schema de iradiere pentru experimentarea clinica a metodelor fotofizice de terapie posttraumatica la copii si atleti si dezvoltarea protocoalelor de tratament pentru introducerea metodelor fotofizice in practica clinica in *pediatrie* si *medicina sportiva*;

- ✓ Stabilirea parametrilor optimi ai iradierii laser si schema de iradiere pentru experimentarea clinica a metodei fotofizice de terapie posttraumatica fotofizica la *adulti* si *varstnici*.

Articole:

1. N Herascu, B Velciu, **M. Calin**, D Savastru, C Talianu, "LLLT Efficacy on Post-operative Wounds", Photomedicine and Laser Surgery, vol. 23, nr.1, pp. 70-73, 2005

2. D. Gazdaru, C. Chilom, **M.A.Calin**, C. Geanta, A. Popescu, Laser radiation propagation and heat transfer into cells and tisúes, Romanian J. Biophys, vol. 17, 2008

LASER RADIATION PROPAGATION AND HEAT TRANSFER INTO CELLS AND TISSUES

DOINA GAZDARU, CLAUDIA CHILOM*, MIHAELA ANTONINA CALIN**, CATALIN GEANTA* and AUREL POPESCU**

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[**]National Institute of Research and Development for Optoelectronics INOE 2000, Bucharest

Abstract. In this paper we shall approach only interaction of laser radiations with highly scattering and/or absorbing biological materials (i.e., opaque materials). The photon multiple scattering by cells and tissues is approached from the perspective of the general propagation theory (i.e., simple diffusion) of a particular physical magnitude, provoked by its conjugated gradient. In this way, one can obtain, in a particular case, the analytic expression of fluence rate for the isotropic tissues. The propagation theory is also conducting to the model of heat transfer (i.e., spatial-temporal evolution of the temperature) in the adjacent regions of target in which the laser absorbed energy was converted in heat.

3. **M.A. Calin**, C. Marcu, D. Savastru, S. Botea, The modification of endothelial cell culture optical parameters during low level laser therapy, 4th National Symposium of Pathology, 31-oct-2 nov, 2007 Bucharest, 2007

THE MODIFICATION OF ENDOTHELIAL CELL CULTURE OPTICAL PARAMETERS DURING LOW LEVEL LASER THERAPY

MIHAELA ANTONINA CALIN*, MARCU COSMIN*, DAN SAVASTRU*, SIMONA BOTEA**

*National Institute of Research and Development for Optoelectronics, Magurele, Romania;
** Victor Babes National Institute for Research and Development in Pathology and Biomedical Sciences, Bucharest. Romania

Abstract. Low Level Laser Therapy (LLLT) is a new and noninvasive method used both in human and veterinary medicine. Although the action mechanism of low laser radiation at the molecular, cellular, tissular and at of whole body is very complex and not completely understanding, the utilization of LLLT in clinic is raised. In this respect, the scientific explanation of LLLT use, taking into account not only the subjective answers of the patients but in particularly the measurable parameters, like the optical ones, is the main target of this research domain.

4. M.A. Calin, S.V. Parasca, T. Coman, The evaluation of the low level laser therapy in surgical wound management, The 2-nd INDLAS Internacional Conference – Modern Laser Applications, 20-23 mai 2008, Bran, Romania.

THE EVALUATION OF THE LOW LEVEL LASER TERAPY IN SURGICAL WOUND MANAGEMENT

Mihaela Antonina Calin [*], Sorin V Parasca[**] and Toma Coman [***]

[*] National Institute of Research and Development for Optoelectronics, Magurele 077125, Romania
[**] Clinical Hospital for Plastic Surgery and Burns, Bucharest. 010761, Romania
[***] Spiru Haret University, Veterinary Medicine Faculty, 13. Ion Ghica str. Bucharest, Romania

Abstract. Surgical wounds are open traumatic lessions as a result of operations on skin and mucous. The wound treatment cost in terms of finance and time is relatively high; the complete wound healing lasts 3 weeks. To minimize this periode of healing of surgical wound and suppression some secundar effect, therapeutic methods and drug are used in post-operative process. One of these method is Low Level Laser Therapy (LLLT). LLLT has been used for treatment of wounds for over two decades in many medical centers of the world. However, despite such wide clinical usage, there is still controversy regarding the efficacy of LLLT in the treatment of wounds. Many laser systems, different laser parameters and irradiation conditions, and a great variety of treatment protocols lead to these conclusions. The goal of this paper is to present our evaluation of LLLT role in surgical aseptic wound management based on the hematologic exem, histologic exem and biochemical blood analysis using SCL-TR laser system.

5. **M. A. Calin**, S. Botea, *In vivo* comparative study of simple and double fractioned low level laser irradiation schemes on rat skin lesions using diffuse reflectance spectroscopy, Lasers in Med. Sci. (in curs de publicare).

6. **M. A. Calin**, C. Marcu. S,.Botea. The efficacy of fractioned radiation procedures on cultures of human cells, Al-30 lea Congres National de Medicina Fizica si de Recuperare cu participare Internationala, Bucuresti, Palatul Patriarhiei, 14-17 Sept. 2007

7. I.M. Gherasim, G. Manda, M. Neagu, S. Botea, **M. A. Calin**, M. Leabu, Effects of laser radiations on human umbilical vein endotelial cells, The (Un)Predictible Future of Cellular and Molecular Medicine - 4th National Symposium of Pathology, 31 oct. – 2 nov. 2007, Bucarest, Romania.