

Srpsko društvo za mikroskopiju
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Biološki fakultet, Institut za zoologiju, Univerzitet u Beogradu
Institut za biološka istraživanja "Siniša Stanković", Univerzitet u
Beogradu
Fakultet tehničkih nauka, Univerzitet u Novom Sadu

PROGRAM I KNJIGA PROŠIRENIH APSTRAKATA

Četvrti srpski kongres za mikroskopiju
11-12. Oktobar 2010, Beograd, Srbija
4SCM-2010

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Jasmina Grbović Novaković
Nataša Nestorović

Izdavači:

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Institute for Biological Research "Siniša Stanković", University of
Belgrade
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PROGRAM AND PROCEEDINGS
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PROGRAM: Nauka o materijalima (Material science)

Ponedjeljak (Monday), 11.10. 2010 SANU (SASA)

9⁰⁰-10⁰⁰ **Registracija (Registration)**

SVEČANA SALA

10⁰⁰-11⁰⁰ **OTVARANJE (OPENING CEREMONY)**

11⁰⁰-11³⁰ **GENERALNA SKUPŠTINA DRUŠTVA
(GENERAL ASSEMBLY)**

Predsedavajući (Chairmen) dr Nataša Bibić, dr Aleksandra Korać

11³⁰-12¹⁵ Prvo plenarno predavanje (**First Plenary Lecture**)

Velimir Radmilović

**ABERRATION-CORRECTED TRANSMISSION
ELECTRON MICROSCOPY: A POWERFUL TOOL IN
CHARACTERIZATION OF NANOSTRUCTURES**

National Center for Electron Microscopy, Lawrence Berkeley
National Laboratory, University of California, Berkeley, USA

12¹⁵-13⁰⁰ Drugo plenarno predavanje (**Second Plenary Lecture**)
Aleksandra Korać
STEM ĆELIJE MASNOG TKIVA: NEVIDLJIVA MOĆ
(STEM CELLS IN ADIPOSE TISSUE: INVISIBLE POWER)
Biološki fakultet, Univerzitet u Beogradu

13⁰⁰-14³⁰ Pauza za ručak (**Lunch Break**)

SVEČANA SALA:

Predsedavajući (Chairmen): Dr Velimir Radmilović, Dr Nenad Ignjatović

14³⁰-15⁰⁰ **Predavanje po pozivu (Invited lecture)**
Nikola Krstajić¹, Richard Hogg¹, Stephen J. Matcher²
**DEEP TISSUE IMAGING USING OPTICAL COHERENCE
TOMOGRAPHY**

¹Department of Electrical and Electronic Engineering, University
of Sheffield, Sheffield, United Kingdom

²Department of Engineering Materials, University of Sheffield, Sheffield, United Kingdom

15⁰⁰-15¹⁵

Nenad Ignjatovic, Dragan Uskokovic

NANOCOMPOSITES BASED ON CALCIUMPHOSPHATE AS NEW CONTROLLED BONE DRUG DELIVERY SYSTEMS

Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia

15⁰⁰-15¹⁵

Stevo Najman¹, Jelena Rajković², Milena Kostić³, Nebojša Krunic^{1,3}, Vojin Savić¹

SEM ANALYSIS OF THE SURFACE STRUCTURE OF ACRYLIC PROSTHETIC MATERIALS AFTER IMMERSION IN ARTIFICIAL SALIVA

¹Medical faculty, University of Niš, Serbia

²Faculty of Sciences, Department of Biology, University of Niš, Serbia

³Dental Clinic, Department of Dental Prosthetics, Niš, Serbia

15³⁰-15⁴⁵

Vojislav V. Mitić^{1,2}, Vladimir Pavlović¹, Ljubiša Kocić², Vesna Paunović², Jelena Purenović², Jelena Nedin², Miroslav Miljković³

ADVANCED ELECTROCERAMICS MICROSTRUCTURE FRACTAL ANALYSIS

¹Institute of Technical Sciences of SASA, Beograd, Serbia

²Faculty of Electronic Engineering, University of Niš, Serbi

²Laboratory for Electron Microscopy, University of Niš, Serbia

Utorak (Thursday), 12.10. 2010 REKTORAT

SALA 16

9⁰⁰-10⁰⁰

Registracija (Registration)

Predsedavajući (Chairmen): dr Nebojša Nikolić, dr Ljiljana Matović

10⁰⁰ -10³⁰

Nataša Bibić (Invited Lecture)

ION BEAM INDUCED MIXING IN Fe/Si STRUCTURES

Vinča Institute of Nuclear Sciences, University of Belgrade

10³⁰ - 10⁴⁵ Damir Kakaš, Branko Škorić, Pal Terek, Lazar Kovačević,
Aleksandar Miletić, Marko Vilotić
**MICRO/NANO-TRIBOLOGICAL PHENOMENON
INVESTIGATION BY AFM AND SEM**
Faculty of Technical Sciences, University of Novi Sad

10⁴⁵ - 11⁰⁰ Branko Škorić, Damir Kakaš and Aleksandar Miletić
**SEM STUDY OF WEAR BEHAVIOUR OF HARD
COATINGS WITH ION IMPLANTATION AFTER
TREATMENT**
Faculty of Technical Sciences, University of Novi Sad, Serbia

11⁰⁰ - 11¹⁵ Nina Obradović, Suzana Filipović, Vladimir Pavlović
**STRUCTURAL ANALYSES OF SINTERED MT AND BZT
CERAMICS**
Institute of Technical Sciences-SASA, Belgrade, Serbia

11¹⁵ - 11³⁰ S. Ratkovic¹, E. Kiss¹, G. Boskovic¹, O. Geszti², N. Peica³, C.
Thomsen³
**ADVANCED C-NANOTUBES PROPERTIES DUE TO
CATALYST METAL-SUPPORT INTERACTIONS**
¹University of Novi Sad, Faculty of Technology,
²Research Institute for Technical Physics and Materials Science,
Budapest, Hungary
³Technische Universität Berlin, Berlin, Germany

11³⁰ - 11⁴⁵ **Pauza za kafu (coffee break)**

SALA 16

Predsedavajući (Chairmen): dr Leposava Šidjanin, dr Dragan Rajnović

11⁴⁵ - 12¹⁵ Nebojša D. Nikolić¹, Vesna M. Maksimović²,
Goran Branković³ **Predavanje po pozivu (Invited lecture)**
**ANALYSIS OF IRREGULAR COPPER DEPOSITS BY THE
OPTICAL AND SCANNING ELECTRON MICROSCOPY
(SEM) TECHNIQUES**
¹ICTM – Institute of Electrochemistry, University of Belgrade
²INN Vinca, University of Belgrade
Institute for Multidisciplinary Research, University of Belgrade

12¹⁵-12³⁰

Tetsuo Oikawa

**CS CORRECTED TEMs FROM JEOL FOR
NANOMATERIALS APPLICATION**

Jeol Europe S.A

12³⁰-12⁴⁵

Ivana Stojković¹, **Nemanja Gavrilov**¹, Nikola Cvjetićanin¹,
Vladislav Pavlović², Slavko Mentus¹

**NANOSTRUCTURED (α -, β -) MnO₂: SUPPORT
INFLUENCE**

¹Faculty of Physical Chemistry, University of Belgrade,

²Institute of Technical Sciences of SASA

AULA REKTORATA

12⁴⁵-14⁴⁵

Poster sekcija (Poster session)

14⁴⁵

**Dodela nagrada za najbolju oralnu i poster prezentaciju,
koktel i zatvaranje kongresa
(Award and closing ceremony)**

PROGRAM: Prirodne nauke i biomedicina (Life sciences)

Ponedjeljak (Monday), 11.10. 2010 SANU (SASA)

9⁰⁰-10⁰⁰ **Registracija (Registration)**

SVEČANA SALA

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12¹⁵-13⁰⁰ Drugo plenarno predavanje (**Second Plenary Lecture**)
Aleksandra Korać
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(STEM CELLS IN ADIPOSE TISSUE: INVISIBLE POWER)**
Biološki fakultet, Univerzitet u Beogradu

13⁰⁰-14³⁰ **Pauza za ručak (Lunch Break)**

SALA 2

Predsedavajući (Chairmen) dr Dušica Janošević, dr Aleksandra Korać

14³⁰-14⁴⁵ **Vladan Milosavljević**
**CARL ZEISS COMPLITE SOLUTION PROVIDER -
RUTINA I ISTRAŽIVANJE, BIOMEDICINA I
MATERIJALI**
Carl Zeiss

14⁴⁵-15⁰⁰

Slobodan Stojanović¹, Gordana Ušćebrka¹, Dragan Žikić², Zdenko Kanački¹

STRUCTURAL CHARACTERISTICS OF SKELETAL MUSCLE TISSUE OF BROILERS AND LAYERS DURING THE EMBRYONIC PERIOD OF DEVELOPMENT

¹Department of Veterinary Medicine, Faculty of Agriculture, University of Novi Sad, Serbia

²Department of Animal Sciences, Faculty of Agriculture, University of Novi Sad, Serbia

15⁰⁰-15¹⁵

Milica Markelić¹, Ksenija Veličković¹, Biljana Buzadžić², Aleksandra Korac¹

BROWN ADIPOSE TISSUE RESPONSE TO COLD EXPOSURE DURING PREHIBERNATION IN GROUND SQUIRRELS

¹Faculty of Biology, University of Belgrade, Serbia

²Institute for Biological Research "Sinisa Stankovic", University of Belgrade, Serbia

15¹⁵-15³⁰

Marija Marin¹, Sonja Duletić-Laušević¹, Petar D. Marin¹ & Vesna Koko²

MICROMORPHOLOGY AND ULTRASTRUCTURE OF GLANDULAR TRICHOMES, OF *SATUREJA MONTANA* L.

¹Institute of Botany and Botanical Garden "Jevremovac", Faculty of Biology, University of Belgrade, Serbia

²Institute of Zoology, Faculty of Biology, University of Belgrade, Serbia

15³⁰-15⁴⁵

Branka Uzelac¹, Dušica Janošević², Snežana Budimir¹

STRUCTURAL CHANGES OF MESOPHYLL CELLS IN SENESCING TOBACCO LEAVES

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²Institute of Botany and Botanical Garden "Jevremovac" Faculty of Biology, University of Belgrade, Serbia

Utorak (Tuesday), 12.10. 2010 REKTORAT

9⁰⁰-10⁰⁰ **Registracija (Registration)**

SALA 8

Predsedavajući (Chairmen) dr Gordana Ušćebrka, dr Nataša Nestorović

- 10⁰⁰ -10³⁰ **Predavanje po pozivu (Invited Lecture)**
Milica Manojlović-Stojanoski
SAVREMENA STEREOLOGIJA, IZRAŽAVANJE
BROJNOSTI PRIMENOM FIZIČKOG I OPTIČKOG
DIZAJNA
Institut za biološka istraživanja „Siniša Stanković“, Beograd
- 10³⁰ - 10⁴⁵ **Svetlana Trifunović**, Vladimir Ajdžanović, Milica Manojlović-
Stojanoski, Nataša Ristić, Verica Milošević
GENISTEIN STIMULATES ACTH CELLS IN ADULT
RATS: A MORFOLOGICAL STUDY
Institute for Biological Research "Sinisa Stankovic", University of
Belgrade, Serbia
- 10⁴⁵ - 11⁰⁰ **Ivana Medigović**¹, Branka Šošić-Jurjević¹, Jasmina Pantelić¹,
Branko Filipović¹, Dragan Žikić², Nataša Nestorović¹
GENISTEIN AFFECTS OVARIAN FOLLICULOGENESIS:
A STEREOLOGICAL STUDY
¹Institute for Biological Research “Siniša Stanković”, Serbia
²Faculty of Agriculture, University of Novi Sad, Serbia
- 11⁰⁰ - 11¹⁵ **Igor Golić**¹, Lela Šurlan², Ivan Tulić², Bato Korać³, Vesna
Otašević³, Aleksandra Korać¹
THE CORRELATIVE MICROSCOPY OF PARTIALLY
FRAGMENTED HUMAN EMBRYOS
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11¹⁵-11³⁰

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ESTROGEN RECEPTOR α LOCALIZATION IN HUMAN FETAL ADIPOSE TISSUE

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⁴Department of Endocrinology, Institute of Internal Disease, Clinical Centre Vojvodina, Novi Sad, Serbia

11³⁰-11⁴⁵

Pauza za kafu (Coffee Break)

SALA 8

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11⁴⁵-12⁰⁰

Jasmina Pantelić, Branko Filipović, Branka Šošić-Jurjević, Ivana Medigović, Milka Sekulić

EFFECTS OF TESTOSTERONE AND ESTRADIOL TREATMENT ON BONE HISTOMORPHOMETRY IN ORCHIDECTOMIZED MIDDLE-AGED RATS

Institute for Biological Research "Siniša Stanković", Serbia

12⁰⁰-12¹⁵

Petar Milovanović¹, Jelena Potočnik², Olivera Nešković², Milovan Stoiljković², Danijela Djonić¹, Slobodan Nikolić³, Marija Djurić¹, Zlatko Rakočević²

NANOSTRUCTURE AND COMPOSITION OF HUMAN FEMORAL TRABECULAR BONE IN YOUNG VS. OLD FEMALE

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12¹⁵-12³⁰

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**MICROSCOPIC ANALYSIS OF TOOTH-COMPOSITE
CEMENT INTERFACE AFTER DIFFERENT IN VITRO
SIMULATED CEMENT REMOVAL PROCEDURES**

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12⁴⁵-14⁴⁵

Poster sekcija (Poster session)

14⁴⁵

**Dodela nagrada za najbolju oralnu i poster prezentaciju,
koktel i zatvaranje kongresa (Award and closing ceremony)**

Dear colleagues,

We are pleased and honored to welcome you in Belgrade at the 4th Serbian Congress for Microscopy.

The 4th Serbian Congress for Microscopy continues the tradition of microscopy Congresses and Conferences in Serbia which started in 1982 with the First scientific meeting of Serbian society for electron microscopy here, in Belgrade. The first two congresses in 1994 and 1996 were termed as Congress on Electron Microscopy, but the name of this congress is changed into the Serbian Congress for Microscopy in order to stress the wider scope of the Congress, and to include all varieties of microscopy in 2007.

Topics of the Congress cover all applications of microscopy in science and technology, including transmission and scanning electron microscopy, light microscopy, laser confocal microscopy etc. The 4SCM-2010 comprises scientific sessions consisting of plenary lectures, invited lectures, selected oral presentations and poster presentations, as well as exhibition and social events. The 4SCM-2010 is celebrating 100th anniversary of the birth of Pavle Savić and 40 years of electron microscopy in Niš.

The main goal of the 4SCM-2010 is to allow the scientists to exchange the most recent results and technical advances in the development and application of microscopic techniques in materials characterization and biological application in order to foster basic knowledge on those materials and to improve contacts for future scientific cooperation and networks. This volume contains abstracts of all presentation at the 4th Serbian Congress for microscopy.

We are confident that Belgrade Congress will serve you to get not only an illustration of what's going on but also hints and suggestions about what's going to happen, making thus your participation useful and enjoyable.

Have a nice time with science, with your fellow scientists and with the city of Belgrade!

On behalf of the Organizing Committee

Jasmina Grbović Novković
President of Serbian Society for Microscopy

PAVLE SAVIĆ (10.1.1909 - 30.5.1994.)



Nekoliko značajnih institucija srpske nauke: Srpska akademija nauka i umetnosti, Univerzitet u Beogradu, Institut za nuklearne nauke Vinča i Fakultet za fizičku hemiju, proglasilo je ovu godinu godinom Pavla Savića, u znak poštovanja njegovog doprinosa razvoju ovih institucija i ukupnoj srpskoj nauci.

Srpsko društvo za mikroskopiju pridružuje se jubileju kratkim podsećanjem na ovog velikana srpske nauke.

Pavle Savić je rođen u Solunu, osnovno školovanje započeo je u Svilajncu 1918, tada pod Bugarskom okupacijom, a dovršio u Beogradu, dok je gimnaziju završio u Požarevcu gde mu se otac preselio po potrebi službe.

U periodu 1927. do juna 1932. godine studirao je fizičku hemiju na Beogradskom univerzitetu. Tokom studija bio je asistent volonter kod profesora fizičke hemije i ženevskog doktora Miloja Stojiljkovića. Po diplomiranju, ukazom iz 1933. godine, postao je asistent na Medicinskom fakultetu kod Dragoljuba Jovanovića, vanrednog profesora fizike i radiohemije, koji je svoju doktorsku diplomu stekao u pariskom Institutu za radijum.

Po preporuci profesora Jovanovića, krajem 1935. godine Pavle Savić je otišao u Francusku u Institut za radijum, kao stipendista francuske vlade. Dobio je šestomesečnu stipendiju, ali je posle ideje kako pomoću difrakcije na kristalima određivati energiju neutrona, dobio ponudu Irene Kiri, poznate po otkriću veštačke radioaktivnosti, da radi direktno sa njom na dobijanju transurana, pa je tu ostao do kraja 1939. godine.

Kao rezultat rada u Institutu za radijum u Parizu, Irena Kiri i Pavle Savić su 1938. godine objavili rad po kome se u produktima reakcije urana sa neutronima nalaze primese sa osobinama elemenata iz sredine periodnog sistema, koji je bio neposredan uvod u pronalazak nuklearne fisije. Nešto kasnije Nemci Han i Štrasman su bez sumnje utvrdili prisustvo lakših elemenata u produktima urana bombardovanog neutronima i njima je Nobelov komitet dodelio nagradu za otkriće fisije, mada su brojna mišljenja da su pionirski posao u tome uradili profesor Savić i Irena Kiri.

Tokom boravka u Parizu radio je i na antifašističkim programima u udruženju jugoslovenskih studenata koje je preraslo u revolucionarni pokret, gde je došao u kontakt sa Edvardom Kardeljem i Josipom Brozom.

Po početku II svetskog rata, kao strancu, nije mu bio dozvoljen dalji boravak u Francuskoj, pa se vratio u zemlju. U decembru 1939. godine izabran je za honorarnog nastavnika fizičke hemije novoosnovanog Farmaceutskog odseka Medicinskog fakulteta. U bombardovanju 6. aprila 1941. godine uništena je laboratorija u kojoj je radio, pa se potpuno posvetio aktivnostima u NOP-u. Bio je šifrant i rukovodilac radiostanice i održavao veze Vrhovnog štaba NOP i Moskve.

Krajem 1942. godine na prvom zasedanju AVNOJ-a, postao je prvi poverenik za prosvetu AVNOJ-a, kome je bio i prvi potpredsednik. Kao rukovodilac prosvetnog odseka, doneo je niz odluka iz reforme školstva, Statut narodnog univerziteta i Uputstvo nastavnicima za rad u osnovnim školama. Aktivno je učestvovao u borbama tokom četvrte i pete ofanzive na Jugoslaviju.

Dve godine tokom II svetskog rata radio je u Moskvi u Institutu za fizičke probleme AN SSSR kod akademika Leonida Kapice. Iz tog perioda poznato je njegovo rešenje za trajno čuvanje tečnog helijuma, u vidu specijalne modifikacije Djuarovog suda. Kapica je zahvaljujući poznanstvu sa Pavlom Savićem kasnije u dva maha posećivao Jugoslaviju, 1966. i 1977. Ovo poznanstvo omogućilo je kasnije intenzivnije povezivanje srpske i ruske nauke putem zajedničkih projekata i razmene istraživača.

Odmah po oslobodjenju postao je predsednik Privrednog saveta Srbije. Septembra 1947. godine tadašnja jugoslovenska vlada pokrenula je gradnju instituta u Vinči. Prvobitni naziv bio mu je Institut za ispitivanje strukture materije, kasnije preimenovan u Institut za nuklearne nauke Vinča. Pavle Savić je imao vodeću ulogu u izgradnji i planiranju naučne politike i bio formalni šef Instituta sve do 1960. godine.

Odmah po okončanju II svetskog rata, 1945. godine postaje redovni profesor fizičke hemije na katedri za fizičku hemiju Filozofskog (od 1947. godine Prirodno-matematičkog) fakulteta. Čitavo vreme do penzionisanja 1966. godine, kao profesor, predavao je atomistiku i fizičku hemiju studentima fizičke hemije. U periodu od 1948-1966. godine bio je upravnik Fizičko-hemijskog zavoda. Generacije fizikohemičara su pod njegovim mentorstvom diplomirale i započele naučnu karijeru u Institutu Vinča i institutima širom sveta.

Krajem 1946. i tokom 1947. godine bio je prorektor Univerziteta u Beogradu.

Od 2. 3. 1946 je dopisni član tadašnje Srpske kraljevske akademije. Redovni član SANU je od 18. 3. 1948. godine, a u periodu od 16. decembra 1971. do 28. maja 1981. godine i njen predsednik. Kao predsednik SANU, zalagao se za jačanje uloge inovacionog rada u društvu i sprečavanje emigriranja naučnika. Dao je niz intervjuova medijima u kojima je obrazlagao svoje stavove o ulozi nauke u društvu, položaju naučnika, odgovornosti naučnika za ekonomično korišćenje sredstava u oblasti nauke, integrativnoj ulozi Akademije u sistemu školovanja, organizaciji naučnoistraživačkog rada u institutima, postavljanju

kriterijuma za ocenjivanje naučnih rezultata, povezivanju instituta sa industrijom. Izborom Savića za predsednika Akademija je znatno proširila međunarodnu saradnju sa velikim naučnim kućama kao što su Kraljevsko društvo u V. Britaniji, Akademija nauka SSSR, Nacionalna akademija SAD, i druge. Integrativnim projektima kojima je koordinirao bile su obuhvaćene mnoge naše velike naučne institucije, velike privredne organizacije - tadašnji nosioci privrednog razvoja, kao i značajne inostrane naučne institucije. Projekti su zahvaljujući dobroj teorijskoj zasnovanosti i društvenom značaju, aktivnošću njegovih saradnika, trajali još mnogo godina posle njegove smrti, 1994. godine.

Posle drugog svetskog rata interesovao se i za ponašanje materijala pod visokim pritiscima, koja su ga dovela do pitanja porekla magnetnog polja i uzrocima rotacije nebeskih tela. Veliki publicitet dobila je njegova teorija o poreklu rotacije nebeskih tela koju je objavio u saradnji sa matematičarem akademikom R.Kašaninom.

Pavle Savić je nosilac brojnih nagrada i priznanja:

1949 - nagrada vlade FNRJ za naučnoistraživački rad u oblasti niskih temperatura

1950 - sedmojulska nagrada NR Srbije za organizovanje naučnog rada u Srbiji

1958 – promocija u počasnog doktora Beogradskog univerziteta

Nosilac je francuskog ordena Legije časti oficirskog reda, koju dobio je u dva maha, 1965. i 1976. godine.

Osim što je bio član i predsednik SANU, bio je još i član svih akademija nauka bivših jugoslovenskih republika i član većeg broja inostranih akademija nauka: SSSR (1958), Njujorške (1961), počasni član Madjarske AN, (1970), Atinske (1975).

CCK-PRODUCING (I) CELLS OF INTESTINAL MUCOSA IN DEXAMETHASONE-TREATED RATS

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1. INTRODUCTION

Some studies indicate that diabetes condition exerts a significant influence on the gastrointestinal tract. Cholecystokinin (CCK) is a neuropeptide hormone found in the brain and secreted from I cells of the intestinal mucosa (in rodents are concentrated in the duodenum and proximal jejunum). CCK is now known to play a significant role in many physiological processes, including stimulation of gall bladder contraction, regulation of satiety, bowel motility, gastric emptying, insulin secretion, pancreatic enzyme secretion, and neurotransmission.

In order to investigate the morphological, immunohistochemical and ultra-structural changes of rat CCK-producing (I) cells of intestinal mucosa in diabetic state, we applied a experimental model of prediabetic stage/diabetes mellitus type 2 (NIDDM). The rats were treated with dexamethasone, because of data about its diabetogenic action.

2. EXPERIMENT

Twenty male Wistar rats (Vinča) aged 30 days, and weighting approximately 128g, were randomly allocated into two groups: dexamethasone-treated (D) and control (C), each consisting of 10 rats. The animals (group D) were given daily intraperitoneal 2 mg/kg dexamethasone or saline (group C) during 12 days, and after that were sacrificed according to a protocol (approved by our Animal Use Committee). The tissue specimens were fixed in Bouin's fluid, dehydrated and embedded in paraffin. Five micrometer sections were stained with H&E. For CCK determination, sections were immunostained by the streptavidin-biotin technique using monoclonal antiserum against gastrin 17/CCK 8. Antigen-antibody complexes were visualized with 3,3'-diamino-benzidine substrate solution. The cell nuclei were contrastained with Mayer's haematoxylin. Tissue samples for electron microscopy were fixed in 3% glutaraldehyde, postfixed in 1% osmium-tetroxide, dehydrated and embedded in Epon 812. Ultrathin sections were double stained with uranyl acetate and lead citrate. Morphometric analysis was performed by using the point-counting method [1], at an objective magnification of x 40 under an Olympus light microscope. Statistical analysis was done by the Mann-Witney nonparametric test.

3. RESULTS AND DISCUSSION

Application of dexamethasone induced disturbances in the investigated part of

gut. CCK-producing cells were recorded in duodenum of the both groups of animals, in crypts and villi, and there they were relatively rare.

Stereological analysis showed decrease in the all three investigated parameters of CCK-producing cells in duodenum of D group of rats: volume fraction, numerical density and number of the cells per mm² of mucosa, comparing to C group of rats, but without statistical significance. Generally, decrease in a density of particular cell type should indicate decrease of products of these cells, and vice versa.

In duodenum of experimental group of rats, ultrastructural analysis revealed hyperactive cells, with strong dilatation of rough endoplasmic reticulum, and with very small number of granules (often with only one), comparing to cells of the C group (fig.2). This fact and decrease in the cell number (detected by immunocytochemistry) likely reflect high rate of hormone releasing (this can be reason for eventual failed detection of the all cells presented on the sections, because of their degranulation) or their destruction because of hyperactivity. There are data about decreased plasma CCK level in NIDDM, and consequently bad regulation of postprandial hyperglycaemia [2], indicating that abnormalities in CCK secretion in diabetes may contribute to hyperglycaemia seen in this disease [3].

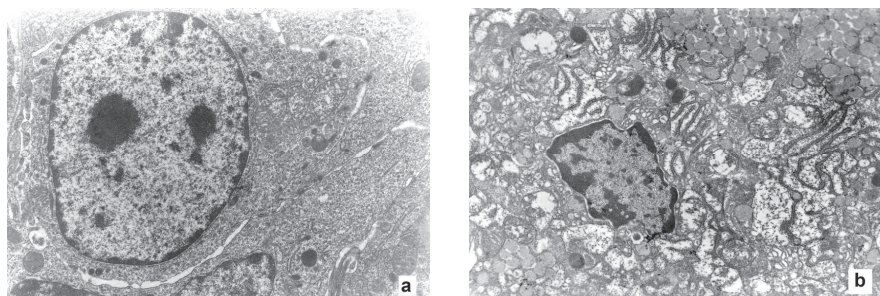


Fig. 1. *Electronmicrographs of CCK-producing cells in duodenum: a) control animals and b) dexamethasone-treated animals (strong dilatation of gER). Uranyl acetate, lead citrate, x 5000.*

4. CONCLUSION

After 12-daily intraperitoneal administration of 2 mg/kg dexamethasone, rats developed diabetes similar to human diabetes type 2. Volume fraction and number of CCK-producing cells per mm² of mucosa, as well as their numerical density, were slightly decreased. Also, dexamethasone induced appearance of hyperactive duodenal I-cells with small number of granules and dilated endoplasmic reticulum.

5. REFERENCES

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6.ACKNOWLEDGMENT. This work was supported by the Grant 145064 from Serbian Ministry of Science and Environmental protection, Serbia and Montenegro. Thanks are due to Mrs. Leposava Jovanović for her excellent technical assistance.