18-a INTERNACIA MEDICINA

ESPERANTO - KONGRESO

10-15.07. 2012

Opava - Ĉeĥio

KONGRESA LIBRO

Opava 2012

Projekto de kovrilo

Anna Krzywda

Fotoj

Štěpán Kopečný

Eldonejo

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Salutvortoj de la ĉefurbestro de Opava, prof. Dr. Zdeněk Jirásek

Altestimataj gesinjoroj!

Estas por mi granda plezuro bonvenigi vin en Opava, en la urbo, kiu aliĝas al siaj longtempaj historiaj tradicioj, kiuj gin prezentis kiel socian kaj kulturan centron de iama aŭstria, nun ĉeĥa Silezio. Tiusence estis Opava samtempe la loko, en kiu renkontiĝadis diversaj naciaj influoj. Ne estas do hazardo, ke ĝuste grandioza kosmopolita projekto de Esperanto kreis ĉiloke fortan intelektan bazon, kio validas ankaŭ por nuna tempo. Jen via kongreso tion klare dokumentas.

Mi scias, ke via renkontiĝo ne okazas en Opava la unuan fojon. Mi firme kredas, ke ankaŭ ĉifoje nia urbo ofertos al vi optimumajn kondiĉojn por viaj traktadoj, kiuj kunligas humanecon de medicino kaj noblecon de Esperanto. Mi esperas, ke ankaŭ la akompana programo de la kongreso plenumos viajn atendojn kaj ke vi konatiĝos ne nur kun vidindaĵojn de nia urbo, sed ankaŭ vi ĝuos belecon de ĝia ĉirkaŭaĵo.

Estimataj gekongresanoj, mi deziras al viaj prezentaĵojn plenan sukceson kaj al ĉiuj partoprenantoj agrablajn travivaĵojn en nia urbo.

Úvodní pozdrav rektora SU prof. Dr. R. Žáčka

Salutvortoj de universitata rektoro Prof. PhDr. Rudolf Žáček

Estimataj gekongresanoj,

mi tre ĝojas, ke Silezia Universitato kaj la urbo Opava havas ĉijare honoron denove gastigi medicinistojn-esperantistojn kaj oferti al ili – laŭ mia espero – la plej oportunajn kondiĉojn por renkontiĝo, komuna traktado kaj interŝanĝo de opinioj.

Jam en tempoj, kiam ĉefe la eŭropa medicino strebis aliĝi al duoneforgesita antikvoepoka tradicio, plene uzis tiaman avantaĝon de unu interkoprenigilo –la latinan lingvon. Eĉ post transiro de plimulto da sciencaj fakoj al etnaj lingvoj, la medicino konservis - la kialon oni ne necesas klarigi - pozitivan rilaton al la latina, almenaŭ en terminologio. Konscio pri utileco de unu interlingvo en scieco ĝenerale kaj en medicino aparte estis sendube la kaŭzo de

pozitiva rilato al Esperanto, kiun trovis multaj medicinistoj. Al la lingvo artefarita sed promesanta, ke helpe de sia logika strukturo kaj relativa facileco ĝi fariĝos universala lingvo ne nur en scienco, sed por ĝenerala interhoma komunikado, lingvo sen iaj ajn politikaj influoj.

Esperanto pro vico da kialoj ne sukcesis tutvaste plenumi eble tro grandajn esperojn, kiujn en gin metis la aŭtoro kaj liaj posteuloj. Tamen eĉ en tempo, kiam la taskon de universala interkomunikilo emas energie transpreni la angla lingvo ĝi restas sukcesa ekzemplo de realigo de pratempa sopiro de la homaro kaj ankaŭ de unuopuloj trovi akcepteblan ligilon, kiu ebligus diskonigon de sciencaj konoj, ŝanĝon de kulturaj valoroj kaj senbarajn ĉiutagajn kontaktojn inter homoj de diversaj nacioj.

Mi deziras al ĉiuj kongresanoj multajn sukcesojn kaj agrablan restadon en Opava.

PROGRAMO DE LA KONGRESO DEDIĈITA AL MERITPLENA

ESPERANTISTO MEDICINISTO D-RO JOSEFO HRADIL

MUDr. Jozefo Hradil

22.11.1924 – 26.10.2008

(dum la 1-a IMEK en Krakovo 1977)

laboris kiel kuracisto ĝeneralisto en la urbo Mnichovo Hradiště en Ĉeĥa Respubliko en regiono nomata Ĉeĥa Paradizo. La loko jam delonge estis konata kiel kuraciga. La patro de la doktoro Hradil estis ankaŭ kuracisto – li konstruis kuracdomon en vilaĝeto Skokovy. Post la jaro 1948 okazis en Ĉeĥoslovakio politikaj ŝanĝoj kaj la familio perdis komplete sian posedaĵon kaj estis persekutita, eĉ la frato de doktoro estis prizonita. La kuracejo servis por komunistaj eminentuloj kaj la doktoro deĵoris kiel kuracisto por homoj en alia urbo, estante samtempe aktiva esperantisto. Li instruis la lingvon, kontribuis al Esperantaj gazetoj, redaktis dulingvan revuon „Verda familio“, kiu havis plurajn centojn da abonantoj kaj ankaŭ la revuon „Sano“, kiu estis faka revuo de esperantaj medicinistoj –en kunlaboro kun eldonisto Petro Chrdle. La rondeto de d-ro Hradil regule kunvenadis eĉ dum tempo por verda lingvo malfavora. La rondeto neniam skribadis kronikon, do pri ĝi ne estas sufiĉaj informoj. Post politika renverso en la jaro 1989 la kuracejo en Skokovy estis redonita al la familio. Ĉar dum ŝtata posedo de la pensiono oni alkonstruis grandan manĝejon kaj domon, akceptis la doktoro ankaŭ altan ŝuldon. La instalaĵoj por bankuracado en subetaĝo dum tempo kadukiĝis. Estis necese, ke d-ro Hradil plu laboru sur sia posteno kaj perlaboradu por vivteni familion kaj pagi ŝuldon. Estis neeble revivigi kuracejon, do la konstruaĵo plu servis kiel pensiono kun nomo: ESPERO.

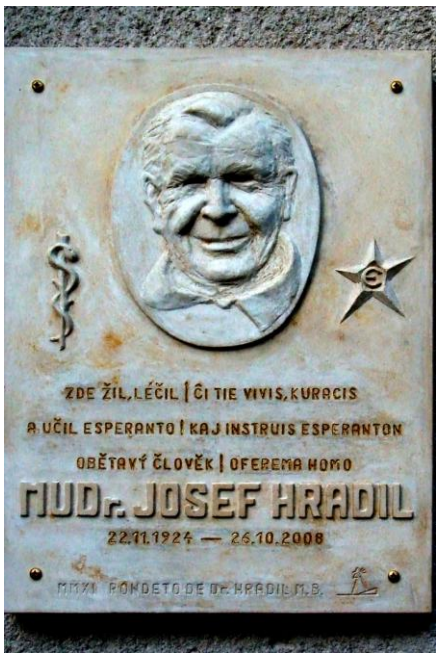
Jozefo Vaněček, kolonelo kaj instruisto en armea lernejo, lernanto de la lingvo ĉe doktoro, post grava akcidento kripligita kaj post kuracado tute surda, fondis kun Jozefo Hradil Asocion de Handikapitaj Esperantistoj kun internacia klubo kaj de tiu tempo la penziono servis por kunvenoj kaj kursoj. Ŝatataj seminarioj

okazadis kaj eĉ nun plu okazadas tie dufoje jare. Homoj, kiuj venadis en pensionon pro konsultado pri sia sano, samtempe praktikis la lingvon. Ili amis la doktoran paciencon, lian silentan aŭskultadon pri propraj plendoj, liajn saĝajn konsilojn. La doktoro ofereme deĵoris, nekredeble diligente, nesubtenata de la familio, kiu sentis en Esperanto ian danĝeron.

D-ro Jozefo Hradil estis nomumita honora membro de Ĉeĥa Esperanto-Asocio, kie li estis longjare prezidanto de ĝia medicina sekcio. El manoj de la rektoro de la Jagela Universitato en Krakovo (1977) li ricevis medalon de M. Kopernik Medicina Akademio por tutviva valora laboro en la movado kaj ĉefe en medicina klubo. Li estas aŭtoro de esperanta medicina terminaro, vico da artikoloj kaj aliaj verkoj.

Li laboris por Esperanto ĝis lastaj siaj tagoj. Li restos en pensoj de centoj da esperantistoj en Eŭropo kaj en la mondo.

Sur la muro de la pensiono Espero en Skokovy en Ĉeĥa Paradizo en meza Ĉeĥio memorigas lian personon ŝtona tabulo kun lia reliefo.



Jindřiška Drahotová, aprilo 2012

SALUTVORTOJ DE UMEA PREZIDANTO

Welcome Speech Mesaĝo

Dr. Ferenczy Imre

az UMEA elnöke

Karaj Gekongresanoj!

En la nomo de la Universala Medicina Esperanto-Asocio kun granda estimo mi salutas la ĉi tie aperintajn partoprenantojn krom nia lando el la fora Japanio, Pollando, Ĉeĥio kaj el Rumanio. Jam pasis 35 jaroj, kiam ni okazigis nian 1-an konferencon en Krakovo kun multnombra ĉeestantaro. Tiu ideo, kiun ni komune kun d-ro Opoka prialboris ankoraŭ en jaro 1976, estis ĝusta kaj necesa, ke ni aranĝu konferencon aŭ kongreson en ĉiu dua jaro en diversaj landoj.

Ankaŭ ĉi-foje mi dankas al la aŭtoritatuloj de la urbo, ĉefe al sinjoro urbestro. La pruvo estas la subteno, ke ni povas okazigi nian solenan malfermon en ĉi tiu bela salono, krome multaj aliaj teknikaj helpoj, kiuj estas necesaj al la okazigo de la unuopaj programoj.

Mi deziras al la kongresanoj utilajn kaj sukcesajn traktadojn. Mi esperas, ke ekde nun povas komenciĝi internacia scienca kunlaboro inter la universitatoj de Krakovo kaj Opava.

D-ro Imre Ferenczy

prezidanto de UMEA

Kontaktadreso: Dr.Ferenczy Imre

iferdr@t-online.hu

La 18-a IMEK estas organizita omaĝe al nia neforghesebla d-ro Josefo HRADIL
por rememorigi lin kaj lian perfektan laboron por esperanto kaj UMEA.

La Espero

'1 En la mondon venis nova sento,
Tra la mondo iras forta voko;
Per flugiloj de facila vento
Nun de loko flugu ĝi al loko.
Ne al glavo sangon soifanta
Ĝi la homan tiras familion:
Al la mond' eterne militanta
Ĝi promesas sanktan harmonion.

'2 Sub la sankta signo de l' espero
Kolektiĝas pacaj batalantoj,
Kaj rapide kreskas la afero
Per laboro de la esperantoj.
Forte staras muroj de miljaroj
Inter la popoloj dividitaj;
Sed dissaltos la obstinaj baroj,
Per la sankta amo disbatitaj.

'3 Sur neŭtrala lingva fundamento,
Komprenante unu la alian,
La popoloj faros en konsento
Unu grandan rondon familian.
Nia diligenta kolegaro
En laboro paca ne laciĝos,
Ĝis la bela sonĝo de l' homaro
Por eterna ben' efektiviĝos.

La 18-a Internacia Medicinista Esperanto-Kongreso

18th International Esperanto Medical Congress

10.07. – 15.07. 2012 Opava, Ĉeĥio

Estimataj,

enkadre de la faka scienca kunveno de kuracistoj kaj farmaciistoj ni havas plezuron inviti vin al partopreno en la 18-a Internacia Medicinista Esperanto-Kongreso kun la ĉeftemo:

Dears,

within professional meeting of physicians and pharmacists, we are pleased to invite you to participate in the 18th International Esperanto Medical Congress with leading theme:

I. „Depresio – minaco de la 21–a jarcento"

„Depression – threat of 21st century"

„Deprese – hrozba 21. století"

and other interesting subjects:

II. Rolo de glutamata kaj GABA-ergic sistemoj en terapio de afektivaj perturboj

Role of glutamate, GABA and other systems in affective disorders

Modulace glutamátu a GABA-ergního systému v terapii afektivních poruch

III. Rehabilitado kaj ĝia rolo en nuntempa medicino

Rehabilitation and its role in current medicine

Rehabilitace a její role v současné medicíně

IV. Vitaminoj kaj kemiaj bioelementoj en nuntempa medicino

Vitamins and chemical bioelements in current medicine

Vitamíny a biogenní prvy v současné medicíně

V. Flankaj efikoj de trouzado de medikamentoj

Adverse effects of polypragmasia

Vedlejší účinky léků jako důsledek polypragmazie

VI. Varia

Under the protectorate of Silesian University in Opava

sub Honora Protektado de Rektoro de Silezia Universitato en Opava

Scientific Committee

President: Prof. dr hab. n. med. Andrzej Pilc

Institute of Pharmacology Polish Academy of Sciences

Jagiellonian University Medical College, Faculty of Health Sciences

Vice President: Prof. dr hab. n. farm. Gabriel Nowak

Jagiellonian University Medical College, Faculty of Pharmacy

Institute of Pharmacology Polish Academy of Sciences

Vice President: Doc. MUDr. ThDr. Mgr. Max Kašparů, PhD., Dr. h. c.

N O R B E R T N U M

Secretary: dr hab. n. farm. Włodzimierz Opoka

Jagiellonian University Medical College, Faculty of Pharmacy, Department of Inorganic and Analytical Chemistry

wlodzimierz.opoka@uj.edu.pl

Organizing Committee: dr Eva Kopečna eva.kopecna@tevapharm.cz

e-mail: umea@interia.pl http://umeaopoka.republika.pl

Membroj de la Scienca Komitato

prof. dr hab. n. med. Andrzej Pilc, prof. dr hab. n. farm. Gabriel Nowak, d-ro KIRYU Yasuo, d-rino Bernadeta Szewczyk, doc. d-ro Max Kašparu, d-rino Małgorzata Frankowska, prof. dr hab. Wojciech Piekoszewski, doc. d-ro hab. n. med. Jolanta Pytko-Polończyk, doc. d-ro hab. n. farm. Jacek Sapa, doc. d-ro hab. n. farm. Włodzimierz Opoka - Ĝenerala Sekretario de UMEA, d-ro Ludoviko Molnár, doc. d-rino Ewa Poleszak, d-ro Frank Nitsche, d-rino Alicja Fąfara-Leś, doc. d-ro Nikolao Shigajev.

Membroj de la Organiza Komitato

Loka Kongresa Komitato

S-ano Vlastimil Kočvara – Vic-Prezidanto

D-rino Eva Kopečna - Prezidanto

S-ano Jiři Caletka– Vic-Prezidanto

d-ro Imre Frenczy – Prezidanto de UMEA, prof. d-ro hab. n. med. Andrzej Pilc,

prof. d-ro hab. n. farm. Gabriel Nowak, d-ro Ludoviko Molnár

doc. d-ro hab. n. farm. Włodzimierz Opoka - Ĝenerala Sekretario de UMEA

s-ino Katarina Faragó Yumeiho® terapiistino kaj kursgvidanto

Loko de la Kongreso:

Silezia Universitato en Opava

Prezidanto de la Scienca Komitato: Prof. dr hab. n. med. Andrzej Pilc

Prezidanto de la Organiza Komitato: D-rino Eva Kopečna

Lekciantoj: prof. d-ro hab. n. med. Andrzej Pilc, d-rino Bernadeta Szewczyk
doc. d-ro Nikolao Shigajev, d-rino Małgorzata Frankowska
d-ro KIRYU Yasuo, prof. d-ro hab. Gabriel Nowak
d-ro hab. n. farm. Włodzimierz Opoka, d-ro Frank Nitzsche
doc. d-ro Max Kašparů, doc. d-rino hab. Ewa Poleszak,
Yumeihoistino Katarina Faragó, d-ro Gerhard Mikolaiczaik,
d-rino Alicja Fąfara-Leś.

PROGRAMO DE LA KONGRESO

I. TAGO – 10.07.2012 /mardo/

De la 14^{00} akceptado de la partoprenantoj, loĝigado, amika kunestado kun alvenintoj kaj lokaj esperantisoj

Vespermanĝo **ekde la 19^{00}**

II. TAGO – 11.07.2012 /merkredo/

Matenmanĝo **$8^{00} – 9^{00}$**

Kunveno de la UMEA Estraro **$9^{00} – 10^{00}$**

Oficiala malfermo de la Kongreso **$10^{00} – 12^{00}$**

Alparoloj de la delegitoj el diversaj landoj

Preskonferenco kun ĵurnalistoj **$12^{00} – 13^{00}$**

Solena tagmanĝo **$12^{30} – 13^{30}$**

Inaŭgura prelego **$13^{30} – 14^{00}$**

ZINC AS A MARKER OF DEPRESSION

d-rino Bernadeta Szewczyk (Instituto pri Farmakologio de Pola Akademio de la Sciencoj)

Prelegsesio, afiŝa sesio **$14^{00} – 16^{00}$**

gvidantoj prof. dr hab. Andrzej Pilc, d-ro Ludoviko Molnár

Kafo-paŭzo **$16^{00} – 16^{15}$**

Prelegsesio **$16^{15} – 18^{00}$**

gvidantoj d-ro KIRYU Yasuo, prof. dr hab. Gabriel Nowak

Yumeiho®-ekzercado – sinpreparĝo, plenumo de skriba-ekzameno (se okazos interesitoj)

Interkona vespero kun vespermanĝo kaj muziko **19^{00}**

III.TAGO – 12.07.2012 / ĵaŭdo/

Matenmanĝo **6^{15} – 7^{15}**

Antaŭtagmeza ekskurso en fabrikon TEVA **7^{15} – 11^{15}**

Tagmanĝo **11^{30} – 12^{30}**

Prelegsesio, afiŝa sesio **12^{30} – 14^{30}**

gvidantoj doc. d-ro Max Kašparu, prof. dr hab. Wojciech Piekoszewski

pritakso de la afiŝa sesio – prof. d-ro hab. Andrzej Pilc, doc. d-ro hab. Dariusz Adamek, prof. d-ro hab. Wojciech Piekoszewski

Yumeiho® ekzamensesio pri diversaj gradoj, parola kaj praktika ekzamenoj

Kafo-paŭzo **14^{30} – 15^{00}**

Prelegsesio **15^{00}– 18^{00}**

gvidantoj d-ro Frank Nitsche, s-ino Katarina Faragó

Vespermanĝo **19^{00}**

Yumeiho® kurso kaj ekzamenoj. Libera vespero.

IV.TAGO – 13.07.2012 /vendredo/

Matenmanĝo **8^{00} – 9^{00}**

Tuttaga ekskurso: Jeseniky

Vespermanĝo **19^{00}**

Vespera kultura programo – Georgo Handzlik kaj Sasa Pilipovic **20^{00}– 22^{00}**

V. TAGO – 14.07.2012 /sabato/

Matenmanĝo **8^{00} – 9^{00}**

Mallonga ekskurso en la urbo Opava **9^{00} – 11^{00}**

Prelegsesio **11^{00} – 12^{30}**

gvidantoj doc. d-ro Nikolao Shigajev, d-rino Małgorzata Frankowska

Tagmanĝo **$12^{30} – 13^{30}$**

Prelegsesio **$13^{30} – 16^{00}$**

gvidantoj d-ro hab. Włodzimierz Opoka, d-rino hab. Jolanta Pytko-Polończyk

Kafo-paŭzo **$16^{00} – 16^{15}$**

Solena fermo de la kongreso **$16^{15} – 18^{00}$**

Adiaŭa vespero kun vespemanĝo kaj muziko (en universitato) **19^{00}**

IV. TAGO – 15.07.2012 /dimanĉo/

Matenmanĝo **$8^{00} – 9^{00}$**

Forveturo

KUNORGANIZANTOJ:

Universala Medicina Esperanto-Asocio

Silezia Universitato en Opava kaj Societo Matice slezská

Esperanta Societo en Opava

Jagelona Universitato Medicina Kolegio en Krakovo, Pollando

Instituto pri Farmakologio de Pola Akademio de la Sciencoj en Krakovo

Laborlingvoj: ESPERANTO, ĈEĤA KAJ ANGLA

SILEZIA UNIVERSITATO KAJ SOCIETO MATICE SLEZSKÁ

Vlastimil Kočvara

Okaze de la 12-a IMEK, kiun gastigis Opava en la jaro 1999 enhavis la kongreslibro skizan historion de la urbo kaj ankaŭ de la loka Esperanto-movado. Ni nun nur kelkvorte Menciu, ke la historio de Opava komencigxis en la 12-a jarcento kaj en sekva fluo de tempo ĝi funkciis en 13-a ĝis la 15-a jarcento kiel centro de Opava duklando, kiun regis la flanka braĉo de la ĉeĥa dinastio Premyslidoj. Post la j. 1742 sekve de divido de Silezio fariĝis Opava landa ĉefurbo de aŭstria parto. Tiun rolon ĝi perdis en la jaro 1928, kiam tiama Ĉeĥoslovakio, estiĝinta en 1918 unuigis Silezion kun Moravio jak la politika centro fariĝis Brno. Nuntempe estas Opava distrikta urbo en Moraviasilezia regiono.

La Esperanto-movado en Opava estis unuafoje menciita en la jaro 1913, inter mondmilitoj ekzistis tie ĉi paralele germana kaj ĉeĥa esperanto-organizaĵoj, kiuj respegulis dunaciecan karakteron de la urbo, kiu finiĝis en 1945. Nova ekfloro de la movado komenciĝis en la jaro 1946. El ĝi elkreskis vico da movadaj gravuloj en la ĉeĥa movado kaj ĝi atingis ankaŭ rimarkindajn sukcesojn. Nuntempe la loka esperantistaro malfortiĝas pro nesufiĉa intereso pri Esperanto inter junaj generaciuloj dum la lokaj movadaj pioniroj kaj korifeoj unu post alia foriras.

Interesuloj pri pluaj ĉi temaj detaloj povas trovi ilin en la menciita Kongreslibro de la 12-a IMEK.

La 18-an IMEK kunorganizas Silezia Universitato kaj societo Matice slezská. Necesas do iom alproksimigi ambaŭ instituciojn al partoprenantoj de la kongreso.

Estis jam menciita la rolo de Opava en tempo inter la jaroj 1742 ĝis 1928. Lige kun sia landa ĉefurba posteno en ĝi sidejis gravaj landaj oficoj kaj la urbo havis rektajn ligojn al Vieno. Tio – krom ankaŭ aliaj faktoj – kaŭzis, ke la urbo fariĝis germanlingva, tamen kun nombra ĉeĥlingva minoritato, vivanta nome en iaj antaŭrboj. Sekve de ĝenerala nacia revekiĝo de Ĉeĥoj en Austria monarkio ankaŭ ĉi tiea minoritato ekprentedis samrajtigi sian gepatran lingvon kun la germana, strebis pri kleriga kaj socia memrealigo egalŝtupe al Germanoj. Rezulto de tiu movado estis fondiĝo de propra organizaĵo, kiu nomiĝis „Matice opavská“ (Similaj organizaĵoj kun la nomo „matice“ ekestis en la 19-a jarcento en pluraj slavaj gentoj, ekz kroatoj, serboj, slovakoj ktp.).

Tiu „Matice opavská“ iniciatis fondigon de ĉeĥlingvaj lernejoj, bibliotekoj, eldonis ĉeĥligvajn presaĵojn, organizis ĉeĥlingvan sciencon en aŭstria parto de Silezio. La organizaĵo dum jaroj fariĝis la plej grava societo de la ĉeĥa minoritato kaj ĝi do estis aŭtoro de ĉiuj ĉefaj atingoj de tiea ĉeĥa lonĝantaro. Ĝi konstituis la unuan ĉeĥlingvan gimnazion en Opava (1880), poste ankaŭ bazajn lernejojn, infanĝardenojn k.s. Jam antaŭ dua mondmilito ĝi proklamis ideon de universitato en Silezio. Tio finfine plenumiĝis nur en la jaro 1991, kiam fondigis Silezia Universitato en Opava. Sed tiu ekesto realiĝis jam en tute alia socipolitika medio de alte evoluiĝinta socio prezentata de Ĉeĥa Respubliko. „Matice opavská“ dum sia pli ol 130 jara

historio travivis malpermesojn – unue de nazioj en 1938, post revivigo en 1945 de komunistoj en 1948 kaj post kvarjara renoviĝo inter la jaroj 1968-1972 denove de komunistoj. Ĝi definitive revenis al siaj aktivadoj post la „velura“ revolucio en 1989 kaj sub la modifita nomo „Matice slezská“ ĝi riĉigas vivon en Moraviosilezia regiono ankaŭ nuntempe. Rezulte do ĝi estas kreinto de ideo de alta lernejo en Ĉeĥa Silezio, kiu tiel kulminigis imagojn de siaj fondintoj el sepdekaj jaroj de la 19-aŭ jarcento.

La unuaj efektivaj paŝoj por establi universitaton en Opava estis faritaj baldaŭ post la dua mondmilito. Esperigan provojn finis la malapero de societo „ Matice opavská“, kiu estis la ĉefa instiganto pri tiu ĉi institucio. Nur en 1990 venis la unua sukceso, Masaryk-Universitato en Brno fondis en Opava memstaran fakultaton. Post unu jaro la fakultato transformiĝis al Silezia Universitato, kiun formis Filosofio-naturscienca fakultato en Opava kaj Komercoenterprena fakultato en la urbo Karvina. Aldoniĝis memstara Matematika Instituto en Opava. En la jaro 2008 la universitaton kompletigis Fakultato de publikaj politikoj en Opava. La Silezia Universitato antaŭvidas sian disvolviĝon pri unu plua fakultato. Nuntempe studas en ĉiuj universitataj fakoj preskaŭ naŭ mil gestudentoj el tuta Ĉeĥa Respubliko, sed ankaŭ el Pollando kaj Slovakio. Danke al siaj fakaj kaj publikaj prezentaĵoj ĝi havas altan prestiĝon ne nur enlande, sed ankaŭ en aliaj landoj, en kiuj ĝi ligis sciencajn kaj klerigajn kontaktojn kun pluraj diversaj altaj lernejoj.

Silezia Universitato fariĝis nepretervidebla fenomeno en publika vivo en Opava kaj en tuta Ĉeĥa Silezio.

PRELEGSERIO KAJ AFIŜA SESIO

INAŬGURA PRELEGO

ORAL PRESENTATION

ZINC AS A MARKER OF DEPRESSION

B. SZEWCZYK[1], G. NOWAK[1,2], M. SOWA-KUCMA[1], U. DOBOSZEWSKA[1], P. POPIK[1,2]

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Depression is a chronic recurring illness, associated with significant disability, morbidity and mortality. Despite the intensive research the exact mechanisms involved in pathophysiology and treatment of depression is still unknown. So far also, no biological markers that would indicate a risk of developing depression; risk of relapse and markers that would allow to estimating of the response to treatment and would inform about the phenomenon of drug resistance have been found.

Recent preclinical and clinical data reported that zinc deficiency can induce depression and zinc supplementation may have potential to enhance antidepressant therapy or even prevent of depressive symptoms. Furthermore, a growing body of evidence, including clinical investigations, suggests that the alterations of blood zinc level could be a potential marker of depression especially the treatment resistant depression.

Supported by Grant POIG 01.01.02-12-004/09, Funds for Statutory Activity of the Institute of Pharmacology, Polish Academy of Sciences and Jagiellonian University Medical College, Kraków, Poland

EXPOSURE TO THE IONIZING RADIATION BY THE ACCIDENT OF THE FUKUSHIMA DAIICHI NUCLEAR POWER PLANT

KIRYU Yasuo, M.D., Ph.D.

The Japanese Esperantist Medical Association

The tremendous earthquake and tsunami which occurred in the northeast Japan, on March, 11th, 2011, broke the Fukushima Daiichi Nuclear Power Plant.

Many people are exposed to the radiation which the plant sent out.

By the end of September, 2011, 750 workers who worked at the plant to stop the accident received more than 50 mSv.

Most of the public in Fukushima were exposed less than 10 mSv.

LA EKSPONIĜO AL JONIGAJ RADIOJ FARE DE LA AKCIDENTO DE LA NUKLEA CENTRALO FUKUSHIMA-DAIICHI

KIRYU Yasuo, M.D., Ph.D.

La Japana Esperantista Medicina Asocio

La Nuklean Centralon Fukushima-Daiichi rompis la tertremego kaj sia sekvanta cunamego, kiuj okazis ĉe la nordorienta Japanio, la 11an de marto, 2011.

Multaj homoj eksponiĝis al jonigaj radioj, kiujn la centralo dissendis.

Ĝis la fino de septembro, 2011, pli ol 50 milisivertojn (mSv) ricevis 750 laboristoj, kiuj laboris ĉe la centralo por haltigi la akcidenton.

Plimulto da publiko en Fukushima eksponiĝis malpli ol 10 mSv.

CO-EXISTENCE OF DEPRESSION AND ADDICTION: INFLUENCE OF OLFACTORY BULBECTOMY ON COCAINE REWARDING EFFECT, EXTINCTION AND DRUG-SEEKING BEHAVIOR IN RATS EXPOSED TO INTRAVENOUS COCAINE SELF-ADMINISTRATION

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Depression and substance (e.g. cocaine) abuse disorders are common concurrent diagnosis. In fact, patients suffering from depression initiate drug-taking behavior to self-medicate the symptoms associated with the existing disorder. In the other hand, chronic use of abused drugs may exacerbate the symptoms of depression and subsequently increase drug-taking behavior. Cocaine dependence is characterized by relapses to drug-seeking and -taking behavior following periods of abstinence where depressive behavior occurs. Thus, the biggest

challenge of successful treatment of co-existing depression and cocaine addiction is preventing craving and relapse.

In pre-clinical studies olfactory bulbectomy induces behavioral and neurochemical changes that resemble clinical depression and is widely used as a valid animal model of depression. The present study we performed to characterize co-existence of depression and cocaine intoxication. To this end, we compared the effects of bulbectomy (OBX) versus sham-surgery (SHAM) on the acquisition, maintenance, extinction and reinstatement of drug-seeking in rats subjected to cocaine intravenous self-administration.

The experiments were performed on male Wistar rats, underwent surgery in which olfactory bulbs were removed by aspiration with a pipette tip and cavity was filled with gelfoam to control bleeding. Special care was taken to avoid damaging the frontal cortex. SHAM-operated controls were treated similarly except that the olfactory bulbs were not removed. Following a 14-day recovery, rats were trained to self-administer cocaine either in increased cocaine dose-range (0.25-1 mg/kg/infusion) or in increased schedule of reinforcement (fixed ratio (FR) 1-5). Each cocaine infusion was paired with the contextual cues (tone+light). After stabilized responding on cocaine self-administration rats were exposed to extinction (8-10 days) with no drug delivery and no contextual cues presentation. Reinstatement of responding was induced by a non-contingent delivery of the reinforcer (2.5-10 mg/kg cocaine, ip) or contingent presentation of the cues previously paired with cocaine self-administration.

Compared with SHAM-operated control rats, the active-lever pressing and the number of infusions during acquisition of cocaine self-administration under increasing doses of cocaine (0.25-1 mg/kg/infusion) or schedule of reinforcement (1-5) did not differed. However, OBX animals showed decreases in he active-lever pressing and the number of infusions during acquisition of cocaine self-administration under a fixed dose of cocaine (0.5 mg/kg/infusion) and FR=5, during first 4 acquisition days. During first 3 days of extinction, we observed increases in active-lever pressing in OBX animals following cocaine (0.5 mg/kg/infusion). Moreover, administration of cocaine per se as well as re-exposition to the cue significantly enhanced reinstatement of seeking-behavior in both OBX and SHAM rats, however, again the number of active lever presses in OBX rats was much higher than in control animals.

These findings indicate that the deficits in OBX rats do not change rewarding effects of cocaine during acquisition of cocaine self-administration. However, our findings concerning cocaine reinstatement showed that depression phenotype is linked with exhibit more pronounced drug craving and a higher propensity to relapse.

This research was supported by the Operating Program of Innovative Economy 2007-2013, grant No. POIG.01.01.02-12-004/09 (Poland) and the statutory funds of the Institute of Pharmacology Polish Academy of Sciences, Krakow.

EXTREMOLYTES – A NOVEL APPLICATION OF THE OLDEST EFFECTIVE STRATEGY OF SURVIVAL OF MICROORGANISMS

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Extremolytes – a novel application of the oldest effective strategy of survival of microorganisms.

Abstract

Extremolytes are small molecules produced by extremophiles. In nature, its purpose is to stabilize and protect biological structures from unfavorable and often fatal environmental influences, such as UV radiation, high salinity (up to 35%), high and low temperatures (desert, hot springs, hot/cold); extremophiles were scientifically described for the first time in 1980. Extremophile microorganisms are the world's oldest living life forms that use extremely unfavorable environmental conditions as their natural protection.

Ectoin is an extremolyte with many faces. As a natural anti-stress molecule it has a protective and therapeutic effect against the destructive environmental factors, such as wide temperature range, its high volatility, dehydration, UV radiation. The protective effect for cells and therapeutic effects were used in dermatological and allergological indications, dry eye syndrome and empty nose syndrome, as well as respiratory diseases. In respiratory allergies it has efficacy comparable to montelukast, in atopic dermatitis efficacy slightly higher than hydrocortisone. Key words: extremophiles, atopic dermatitis, ectoin, allergy, dry eye syndrome.

Extremophilic microorganisms are the oldest life-forms on earth.

They live under enormous stress:

in hot water of geysers and in vulcanoes

under icesheets

in arctic regions

in salt lakes

under extreme UV-radiation in dry deserts

Thermophiles survive high temperature

Psychrophiles survive low temperature of Arctic and Antarctic

Acidophiles survive acidic

Alkaliphiles survive alkaline in soda lakes in Africa and western USA

Halophiles survive high salt in natural salt lakes and manmade pools (Sometimes occurs with extreme alkalinity)

Reasons for survival:

Establishment of cellular components which are able to cope with the stress and work under hard conditions

Extremozymes are enzymes from Extremophiles

The word halophile means "salt loving".A halophile is an organism that can grow

in higher salt concentrations than the norm.

Some extreme halophiles can live in solutions of 35 % salt.

Halophiles are the origin of most prominent Extremolytes.

Osmoregulation

Living in high salinity poses a serious stress that halophiles have overcome through special processes or adaptations. The stress lies in the microbes ability to maintain an internal osmotic potential that equals their external environment.

In order for cells to maintain their water they must have an osmotic potential equal to their external environment. As salinity increases in the environment its osmotic potential decreases.

"Compatible Solute" Strategy

There is one major strategy that halophiles have evolved to deal with high salt

environments. In the "compatible solute" strategy cells maintain low concentrations of salt in their cytoplasm by balancing osmotic potential with organic, compatible solutes.

They do this by the synthesis or uptake of compatible solutes.

Extremolytes include polyols such as glycerol, sugars and their derivatives, amino acids and their derivatives, and quaternary amines such as glycine and betaine; they deal as chemical chaperons, enabling proteins to obtain and maintain the conformity under suboptimal (stress) conditions, and as stabilisers of biological structures as proteins and lipid membranes, e.g. during phases of low humidity to protect resurrection plants from dying.

In summary, extremolytes are small molecules that are accumulated intracellularly in extremophiles and take care of the stabilisation and functional maintenance of biological structures and protect the extremophiles from environmental stresses

Ectoin was found in a salt lake in Wadi Natrun, Egypt, in 1985, in Ectothiorhodospira halochloris

It shields microorganisms from a hostile environment with temperatures between 60°C and 0°C, a humidity of 5% and high salt concentration

Ectoin is multifaceted: As a natural anti-stress molecule it has a preventive and therapeutic action against harmful environmental influences such as variations in temperature, dehydration and UV radiation.

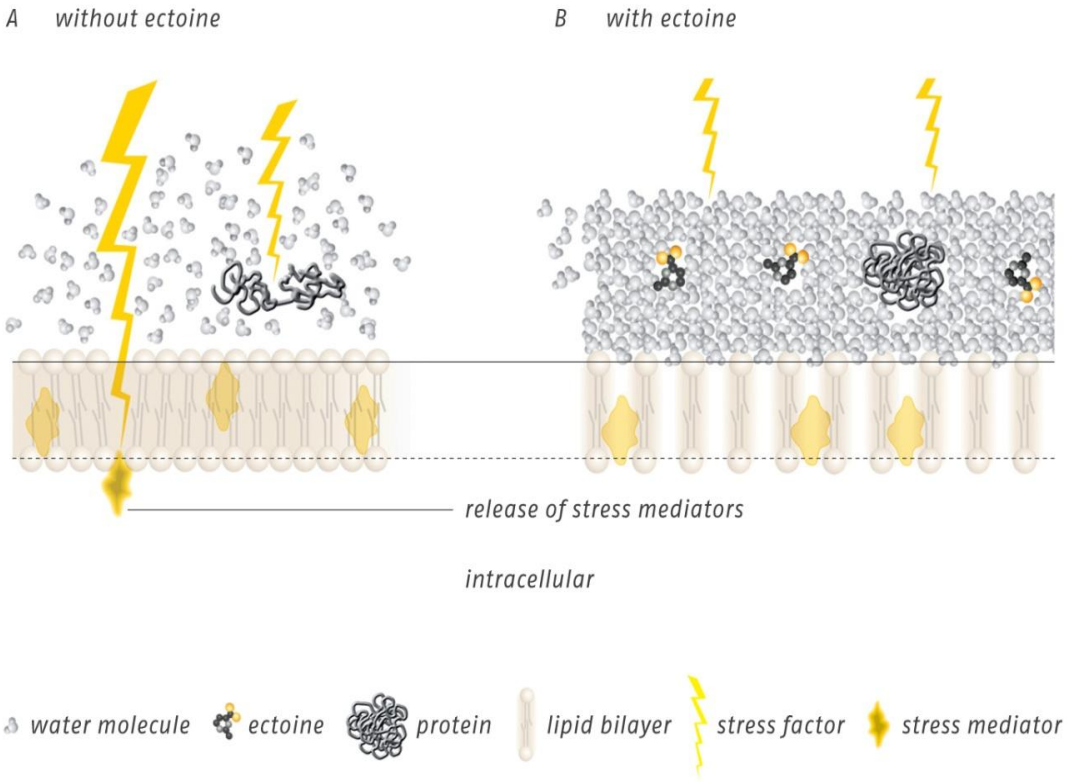
Its cell-protective, moisturising preventive and therapeutic properties can be used successfully for dermatologic and allergic indications, for dry eye/nose syndromes, and also in the respiratory tract.

How does Ectoin work?

It is strongly cosmotropic and a water structure-forming substance, thereby stabilising water cluster complexes. This results in minimisation of biopolymer denaturation and stabilisation of the native protein structure, protection of cells against dehydration by accumulating water

[courtesy Bitop AG]

Protective and Stabilizing Properties of Ectoin [courtesy Bitop AG]



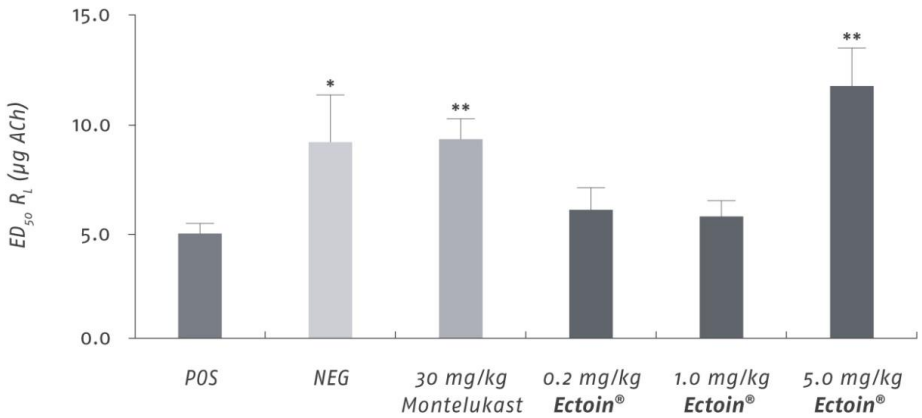
Ectoin mode of Action proven in preclinical models and clinical studys:

Allergy

Ectoin showed efficacy comparable to Montelukast in allergic reactions of the airways

Early allergic reaction and airway hyperresponsiveness could be reduced by Ectoin

Influx of inflammatory cells was reduced significantly [22]

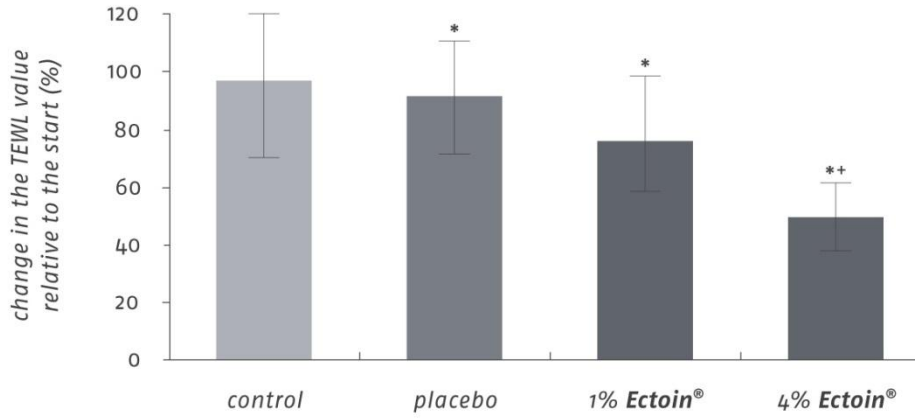


Particulate matter induced Inflammation of the airways (COPD model).

Pre-treatment or treatment with Ectoin reduces particulate matter induced inflammation of the lung.
Inflammation inhibiting effect sustained for up to 168 hours.
Effect also visible on repeated application as model of chronic inflammation.
Reduction of anti-apoptotic signaling induced by e.g. Particulate Matter in the BAL in vivo.

Ectoin increases membrane stability against external stressors in cell models
UV-induced inflammatory processes are inhibited on a cell membrane level.

Ectoin reduces the transepidermal water loss and moisturizes the treated tissue [19].



Ectoin in dermatology at a glance

The skin of a patient with inflammatory dermatoses reacts abnormally and easily to irritants, food and environmental allergens and becomes red, flaky and very itchy.

Prevalence of e.g. atopic dermatitis was about 6 % in 2005 and has risen 3-4 fold over the last 30 years.
Standard therapy: emollients as basic therapy, topical corticosteroids or calcineurin inhibitors for acute symptoms.

Ectoin USP in atopic dermatitis:
protects against inflammation in combination with superior moisturising properties and an excellent safety profile.

Protection of Langerhans cells (human application)

Twice daily treatment with Ectoin or Placebo.
Irradiation with UV-exposer of human- forearm.
Ectoin protects the number of Langerhans.
Cells in UV-irradiated human skin (100% compared to 60%)
study.

Protection of the immune system of the skin

Langerhans cells are one of the key components for the immune system of human skin. They are very sensitive against external stress factors, like UV stress. Therefore an effective protection of these cells is extremely important. The forearm of each participant was either pretreated with ***Ectoin*** cream or placebo formulation and irradiated with UV after 14 weeks. The number of Langerhans cells was determined. Under the influence of UV radiation a significant reduction in the number of Langerhans cells (~ 50%) was achieved. Pretreatment with placebo led to no significant protection against UV-induced reduction of Langerhans cells. In contrast, pretreatment with a 0.3% and 0.5% ***Ectoin*** cream resulted in high and significant protection against the reduction of the number of Langerhans cells.

Treatment and relief for damaged skin

For the treatment and relief of the redness and itching experienced with various types of inflammatory dermatoses, including atopic dermatitis, contact dermatitis and radiation dermatitis.

It helps to relieve the dry, irritated and damaged skin by strengthening the skin barrier, reducing inflammatory reactions and supporting the regeneration process.

Ectoin reduces symptoms such as itching and redness of the skin (erythema)
regenerates damaged skin and protects against new damage,
strengthens the skin barrier function contains no perfumes, dyes or preservatives.

Ectoin – natural anti stress molecule with enormous health potential

- is a natural anti-stress molecule
- is produced by extremophilic microorganisms
- has cell-protective and regenerative properties
- has an excellent safety and tolerability profile
- suitable for children and sensitive or allergic patients
- can be used successfully for treatment of dermatologic and allergic indications, dry eye/nose syndromes, and also in the respiratory tract

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MAKZELOSTAJ NEKROZOJ SEKVE DE TERAPIO KONTRAŬ OSTOPOROZO

Frank NITSCHE

Kiefernekrosen infolge Osteoporosetherapie

Osteonecrosis of the Jaw due therapy against Osteoporosis

Resumo

Dum la lastaj jaroj oftiĝis nekrozoj de la makzelaj ostoj sekve de terapio per bisfosfonatoj. Komence tio rilatis nur al prevento de ostaj metastazoj de tumoroj per envejna injekto. Nun oni pli kaj pli observas tiajn nekrozojn sekve de perbuŝa engluto de bisfosfonatoj kontraŭ ostoporozo.

La prelego montras la aktualan staton de la scioj laŭ la gvidlinioj de la germana laborkomunumo de la fakaj medicinistaj asocioj.

In den letzten Jahren kommen immer häufiger Kiefernekrosen infolge einer Bisphosphonattherapie vor. Zunächst betraf das nur Fälle von Tumormetastasen mit intravenöser Injektion. Jetzt beobachtet man mehr und mehr Kiefernekrosen auch bei peroraler Einnahme von Bisphophonaten wegen Osteoporose.

Der Vortrag zeigt den aktuellen Kenntnisstand nach den Richtlinien der deutschen „Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften“.

During the last years an increasing number of necrosis of jaw has been observed as a consequence of bisphophonate therapies. Initially this phenomenon only related to intravenous injection in treatment of bone metastases of tumors. Nowadays necrosis of jaw are occuring increasingly also in connection with orally taking of bisphosphonates in order to treat osteoporosis. The lecture represents the up-to-date knowledge in accordance with the guidelines of the German Society of Scientific Medical Professional Associations.

UNGVENTA BAZO POR LONGDAŬRE

EFIKANTAJ RIMEDOJ EN STOMATOLOGIO

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Vasta aplikado de farmakologiaj rimedoj en medicino, inkluzive stomatologion, havas sian negativan flankon, ofte ligitan kun ties sistema efiko. Tamen por kuraci multajn malsanojn de buŝa kavo sufiĉas nur loka ago de drogoj. Por faciligi aplikan proceduron kaj altigi pacientan komplezemon grandajn avantaĝojn havas longdaŭre efikantaj kuraciloj. Ebla varianto de tiu drogo estas ungvento, kiu permesas precise kaj homogene distribui aktivan substancon laŭ leza surfaco. Nuntempe en stomatologio oni uzas ne multe da ungventoj. Tio estas ligita kun certaj malbonaj ecoj de tradiciaj ungventoj, inter kiuj estas malagrabla gusto, konsistenco, foresto de ebleco reguligi liberiĝon de aktiva substanco.

Celo de la esploro estis prilaboro de ungventa baza konsisto kaj teknologio. Modelaj substancoj estis klorheksidina biglukonato (la hidrofila) kaj dibunolo (la hidrofoba).

La ungventa bazo konsistis el glicerolo (15,0), vazelina oleo (20,0), lutrolo P-127 (10,0), kremoforo RH-40 (10,0) kaj purigita akvo ĝis 100,0. Por prepari la ungventan bazon oni kunfandis glicerolon, vazelinan oleon, lutrolon P-127 kaj kremoforon RH-40 dum 50-60oC

sur akva banejo. Al la kunfandaĵo oni po parte aldonis purigitan akvon kaj emulsiis ĝin miksante ĝis homogena stato. La preta ungventa bazo estis blanka substanco kun denseco 1,3 g/cm^3, pH 6,0 – 6,4. La bazo havis kontentigan konsistencon, ĝi estis facile aplikebla sur gingivojn kun formiĝo de maldika glata kontinua ŝmiro; dum parodontopatioj post forigo de dentaj precipitaĵoj gingivaj poŝoj estis facile prilaboreblaj per ungvento, farita el la bazo kaj aktivaj substancoj. La ungvento fidinde fiksiĝis al gingivoj kaj havis longdaŭran efikon: la aktivaj komponantoj liberiĝis dum 5 horoj. La bazo havis altan osman aktivecon, kiu konserviĝis post aldono de aktivaj substancoj. Strukure mekanikaj ecoj de la bazo estis studitaj per metodo de struktura detruo kun transiro de malgrandaj gradientoj al la grandaj kaj reen. La baza specimeno ricevis konstantan ŝarĝon dum certa tempo en aparato “Reotest-2” dum temperaturo 34 -37^{o}C. Kresko de delokiga streĉo kaŭzis rekte proporcian ŝanĝon de deformada rapideco, kio indikis apartenon de la ungventoj kaj ties bazo al viskoze plastikaj korpoj kun certa strukturo.

ALERGIGAJ ECOJ DE “BIOPLASTO”

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Unu el la plej oftaj operacioj en kirurgia stomatologio estas forigomde dentoj, kiu poste kaŭzas atrofion de alveola branĉo kaj ŝanĝon de makzela sinusa grandeco. Rezulte komplikiĝas ortopedia kuracado de la pacientoj kaj antaŭ instalado de enplantaĵoj aperas neceso de ostoplastikaj operacioj.

Nuntempe ekzistas sufiĉe multaj materialoj por ostoplastiko, kiuj tamen ne estas idealaj. Nova materialo “Bioplasto” estis prilaborita en scienc-esplora instituto “Vitadent”.

Ni studis ties alergigajn ecojn en eksperimentaj bestoj.

12 blankaj musoj 22 – 25 gramaj estis deviditaj en 2 grupojn po 6 bestoj. Musoj de la eksperimenta grupo estis sensigitaj per enhaŭta injekto (apud vosta bazo) de 60 mkl de miksaĵo, kiu konsistis el egalaj kvantoj de “Bioplasto” kaj plena Freŭnd-adjuvanto (PFA). La bestoj de la kontrola grupo ricevis la saman volumenon de miksaĵo, konsistinta el egalaj kvantojj de PFA kaj Hanks-solvaĵo.

La 5an diurnon post la sensigo ambaŭ grupoj ricevis subplanden en la dekstran malantaŭan piedon po 40 mkl de miksaĵo, konsistinta el “Bioplasto” kaj Hanks-solvaĵo en la proporcio 1:4.

24 horojn post la injekto la bestoj estis eŭtanaziitaj per krani-kola dislokigo. La malantaŭaj piedoj estis amputitaj laŭ talkrura artiko kaj pesigitaj per turn-pesilo. Procento de la dekstra pieda grandiĝo kompare kun la maldekstra estis kalkulita.

La diferenco inter ambaŭ grupoj ne estis statistike fidinda (p>0,1): 14,2+5,2 kaj 19,8+1,8.

Tio atestas foreston de sensigaj ecoj de “Bioplasto” dum ties enhaŭta apliko.

NOVAJ TIETAN-1,1-DIOKSIDOJ KUN ANTIDEPRESIA AKTIVECO

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Drasta ŝanĝo de vivkondiĉoj kaj kondutaj modeloj en la XXIa jarcento kaŭzis ne nur kreskon de depresioj en homa populacio, sed ankaŭ aperon de tre multaj kuraciloj kun antidepresia efiko, kiujn foje oni nomas “drogoj de la XXIa jarcento”. Tamen la kuraciloj ne estas idealaj kaj havas multajn flankajn efikojn, altan toksecon kaj nesufiĉan bazan aktivecon. Tio tutmonde instigas esploristojn serĉi novajn substancojn kun antidepresia aktiveco.

Celo de la esploro estis serĉo de novaj derivaĵoj de tietan-1,1-dioksido kun kontraŭdeprimaj ecoj. La substancoj estis studitaj en testoj de vosta pendigo kaj deviga naĝado. Interligo de strukturo kaj antidepresia aktiveco estis uzita por konstrui matematikan modelon por prognozi la aktivecon de novaj derivaĵoj. Sintezitaj surbaze de la prognozo substancoj estis esploritaj en la samaj testoj. La plej aktivaj derivaĵoj de tietan-1,1-dioksido estis studitaj en testo “malfermita kampo” por taksi spontanean movaktivecon, orientad-esploran konduton kaj emocian reag-nivelon. Ankaŭ akuta tokseco, ED_{50} kaj kumulada koeficiento de la plej aktivaj substancoj estis esploritaj.

Rezulte de la esploro konstruita matematika modelo permesas celkonscie sintezi derivaĵojn de tietan-1,1-dioksido kun antidepresia aktiveco. La programo estis registrita (atesto N 2008610170) kaj ricevis nomon “BrainTest”. Ties apliko montris, ke la prognozaj rezultoj korelacias kun la eksperimentaj en 83%.

Helpe de la programo novaj perspektivaj substancoj estis sintezitaj: 3-metoksitietan-1,1-dioksido (laboratoria ĉifro H14), 3-(2-isopropoksi-5-metilfenoksi)tietan-1,1-dioksido (laboratoria ĉifro H40) kaj 3-fenilsulfoniltietan-1,1-dioksido (laboratoria ĉifro H69). Ili montras antidepresian aktivecon, kompareblan kun tiu de fluoksetino, montrante ege pli altan terapian indekson. Ili ne ŝanĝas spontanean movaktivecon, orientad-esploran konduton kaj emocian maltrankvelecon post unufoja apliko. La substancoj apartenas al la IV klaso de danĝereco dum enperitonea apliko kaj al kategorio de modere danĝeraj substancoj dum enstomaka apliko; ili praktike ne kumulas.

DIFEKTOJ DE DENTA VICO EN INFANOJ

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Frua forigo de konstantaj dentoj en infanoj sen protezigo kutime kaŭzas lokan atrofion de osta histo. Dum la unua jaro post denta forigo malaperas de 20 ĝis 40% de alveola branĉa larĝo [Timofejev A.A., 2002; Robustova T.G., 2003]. Pro difektoj de denta vico aperas deformadoj de dentmakzela sistemo.

Dentoj, speciale la antaŭaj, havas grandan signifon por sonformado kaj vizaĝa estetiko. Ne malpli gravas psikologia traŭma faktoro por formiĝo de infana karaktero.

Celo de la esploro estis kontroli staton de dentmakzela sistemo en kamparo.

439 geinfanoj de 7 ĝis 18-jaraĝaj estis kontrolitaj en Sterlibaŝa distrikto de Respubliko Baŝkortostano. Inter ili 44 personoj (10%) havis forigitajn konstantajn dentojn, al 6 infanoj (1,6%) estis rekomendite forigi detruitajn dentojn kun sekva protezigo kaj 2 infanoj (0,4%) ne havis parton de antaŭaj dentoj pro traŭmo. La plej ofta kaŭzo de denta foresto estis komplikaĵoj de denta kario. En 42 infanoj (9,6%) 58 konstantaj dentoj estis forigitaj dum lastaj 1 – 3 jaroj (laŭ la anamnezo). La plej ofte estis forigitaj unuaj subaj molaroj: 35 (60% de ĉiuj forigitaj dentoj). En 15 infanoj (34%) kun forigitaj konstantaj dentoj horizontala delokiĝo de apudaj dentoj estis trovita. En 13 kazoj (30%) estis fiksita forta atrofio de osta histo sur loko de forigitaj dentoj. En 7 infanoj (1,2%) forestis 2 aŭ pli da konstantaj dentoj. La plej ofte forestis unuaj subaj molaroj de ambaŭ flankoj. La plej multaj forigitaj dentoj estis en infanoj el la aĝa grupo de 13 ĝis 18 jaroj.

HUMAN FIBROBLASTS AS A MODEL OF ZINC TRANSPORT AND CELLULAR INTERACTIONS STUDY

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Recently trace elements have been extensively studied in different research areas because of wide distribution in human diet and multiple biological activities. In scientific research as well as in clinical diagnosis biometals are considered as biomarkers of exposure, biomarkers of effect and response and biomarkers of biological susceptibility. Though trace elements are used for exposure assessment, transport studies and metabolic response. One of the most important biometals which influences essential cellular processes is zinc.

It is of interest to examine the effect of zinc in well established, validated assays. Therefore, the uptake of Zn^{2+} in cell culture of human fibroblasts were performed. BJ (ATCC) cells were cultured in Eagle's Minimum Essential Medium (EMEM), supplemented with 10% Fetal Bovine Serum and with 1% antibiotic solution (100 IU/ml penicillin, 0.1 mg/ml streptomycin). Cells were kept at 37°C in humidified atmosphere of 5% CO_2 in air. At every step of the procedure cell morphology was investigated by inverted light microscope (Olympus). Cells viability during the culture was assessed with Trypan Blue Exclusion Test. 0.4% Trypan Blue solution in buffered PBS without Ca^{2+} Mg^{2+} (pH 7.4) was added to cells and counted in automatic cell counter (Countess, Invitrogen). The percentage of living cells was very high and reached 95-98%. Cells were seeded into plate (Sarstedt) at a density of 4×10^5 cells/plate T75. Zinc aspartate filtered solution in PBS without Ca^{2+} and Mg^{2+} (pH 7.4) at concentration of 13,5 μM/L Zn^{2+} was added to medium and then cells were incubated for 24 h (to control cells only PBS was added). No direct effect on cell proliferation as observed. DPASV and AAS method were applied for the determination of zinc after digestion procedure. In conclusion, these findings support the knowledge of practical application of media, sera and cell culture fluids in well established cell culture model.

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STUDIES ON THE PROTECTIVE PROPERTIES OF NATURAL POLYPHENOLS AGAINST FREE RADICAL COMPONENTS OF CIGARETTE SMOKE IN THE MODEL OF INHIBITION OF LINOLEIC ACID PEROXIDATION

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The naturally occurring polyphenols (*e.g.* in grapes, berries, tea, cocoa) are well-known antioxidants [1-3]. Their protective properties were demonstrated in several *in vivo* [4] and *in vitro* [5] models in different pathogenic and toxic conditions. Until now, relatively few reports on the activity of polyphenols against oxidative components of tobacco smoke were published. In cigarette smoke there is a rich free radical fraction including the semiquinone radical generated in a cyclic reduction of quinones [6].

In our study we tried to assess the protective properties of some polyphenols (flavonoids and non-flavonoids) against the oxidative activity of tobacco smoke. For this purpose, we used a model of inhibition of linoleic acid peroxidation.

We found that direct exposure of linoleic acid to cigarette smoke is not effective because of the competitive effect of reduction. Therefore we used a selective solvent, dichloromethane, to extract the free radical components from smoke and only a dry residue of the extract was contacted with linoleic acid. The level of linoleic acid peroxidation was measured as an increase of absorbance at 234 nm, the band characteristic for conjugated dienes. During two hours incubation we achieved a twofold increase in absorbance due to smoke extract and comparable protective effect of polyphenols in the studied group. It was about 20% inhibition with slightly higher effect for quercetin and resveratrol than gallic acid and caffeic acid in equimolar concentration 4 mM.

Our experiment demonstrated the assumed antioxidant potential of polyphenols against free radical of cigarette smoke and confirmed the usefulness of the model of linoleic acid in the study of protective properties of natural substances.

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THE ROLE OF HUMAN CADAVERS IN SAFE TRAFFIC

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The immeasurable significance of human cadaver donors in the transplant of various organs is widely known, mainly after the first heart transplant in 1960. In this lecture, I will describe the role of human cadavers from another aspect, specifically with regard to traffic safety.

Vehicle safety has improved to a huge extent over the last decades, but despite modern vehicles and safety devices, nearly 50,000 persons were critically injured or died in car accidents on the roads of Europe each year. In order to prevent human beings from suffering severe injuries, at least two things are necessary: the precise knowledge of the behaviour of the human body and the exploration of accident loads. For this purpose, series of thorough experiments must be carried out using five different methods; namely using volunteers, human cadavers, animals, mechanical models and computerized simulations. Car safety experiments were started in the 30ieth and 40ieth of the last century and improved rapidly.

I would like to briefly run through these methods giving more details on the investigation conducted using human cadavers. Human volunteers as means of examination are of help in establishing the limit of tolerance and pain threshold. In a simulator car, a metal pendulum of 10 kg hit them in the chest, while their knees knocked against a metallic bar loaded with a weight having the power of a weight of 430 kg. The injury threshold was estimated to 630 kg. The change in muscle tone and the impact of human reactions can only be researched with the help of this method. However, no examination involving fatal or critical injuries may be carried out with living persons wearing appliances.

As regards animal experimentations, anaesthetized animals are used for performing vehicle crash tests. The first accident experimentations also involving living animal beings were carried out using cats in 1945 in Texas. Pigs were popular subjects because they resemble human beings in their organic structure, and they can be placed in the car in a position very similar to that of human beings sitting in a car. By the way, incidentally the intellectual level of some car drivers is not much different from that of the pigs. In the past years, animals have been used for the most part to examine children injuries or where active organs are needed. Baboons were used to test intense lateral jolting in order to find out why passengers that had suffered lateral accidents fell into a coma so often. Living dogs were recruited to carry out experimentations of aorta injuries.

Next one is the mechanical model, namely the crash dummies, which are composed of metal or plastic frame, joints and a plastic cover layer that simulates meat. They are used to measure head and chest accelerations, chest and stomach pressed in, as well as thigh powers. There are male, female dummies and children dummies of different ages. The main objective is to

create the so-called omnidirectional dummy that behaves as sensitive as a human being does in every direction.

Computerized simulations have significantly developed in the past 20 years. Animal experimentation, crash dummy and human cadaver test results and accident analysis were incorporated into their programs. Three-dimensional human model is already used for modern examinations. Development strategies keep shifting to fast, computerized modelling that makes rapid progress.

Experiments conducted on human cadavers:

The human body structure of corpses is identical to that of living human beings. The technique used during preparations is extremely complicated. It is not only blood and other lymph fluids that must be replaced with adequate physiological solutions and kept at proper temperatures immediately until the experiment is conducted, but for example the lung must also be pumped up to reach an adequate pressure before conducting the crash test. The corpse is seated in the car using insulating tapes, foam rubber, and winch mounted onto the roof of the car, in order to carry out the corpse test. Speedometer is placed on certain bones, the shoulder blade, the collarbone, the vertebra, the breastbone and the head of the corpse in order to measure how the body is accelerated as a result of the blow, and the intensity of the blow will be determined accordingly. After the tests, the injuries occurred will be checked conducting dissection. The lack of muscle tone and psychology reaction is the disadvantage.

Head-on collisions:

The corpses' first contribution to safe driving was the installation of face protection windscreens. The first cars were made without windscreens, and therefore the drivers protected themselves from wind and insects wearing glasses. The first windscreens were made of sheet glass, and so the face of the driver was severely injured in a car crash. When windscreens made of laminated glass were used, the face was cut from the forehead to the chin in accidents. The head when bumped into the windscreen made a hole in it of a size almost identical to that of its own, and then when smashed back intensely and suddenly, it was completely cut by the toothed edges through the hole. The next development, the hardened glass was strong enough to prevent human beings from breaking through it with their heads. However, collision with the hard glass was able to cause brain damage. The concussion emerged as a result of the blow that hit the forehead may be accompanied by cracks on the skull bone. Although the human cadaver suffers no concussion, the cracks can also be observed on the skin surface. The corpses were hung over the glass that simulated car glass and then were dropped from different heights so that they collide on their foreheads. Falling from 200 mm does not yet result in the fracture of the skull, but falling from a height of 1000 mm, crack or fracture of the skull occurs.

Experiments showed that when the hardened glass is not so thick, the power it exerted is unlikely to cause concussion. Today's windscreens slacken even more, and so, without the seat belts being fastened, one can get away as slightly harmed by a little blow in case of a head-on collision of 48 km/hour. Concussion and damage of the brain are still the principal

among the reasons for fatal accidents. The blow that hit the head is often not so severe, but the shock ends in a severe concussion, namely that the head bumps into something in a particular direction and then suddenly smashes back at a great speed in the opposite direction, which is called contrecoup . In the case of usual collisions, both effects are present, and though none of them is of high degree, they together result in severe injury to the head.The rotation means, that skull turns away longaxis of the backbone.

What does exactly happen with the brain in case of combined injuries? The heads of the corpses involved in simulated collisions were filmed by x-ray cameras of great speed. "Brain slapping" was much more intense, and much more phenomena of rotation emerged, than supposed. The brain suffers diffuse axonal injuries, namely fatal tears of brain axons.

During the times before seat belts were installed, the most dangerous dagger inside of a car was the steering wheel. Upon collision in a forward direction, the body slid forward and the chest often smashed into the steering wheel with such intensity that the wheel bent back to its sidepiece, giving the fractures of the ribs and damages of the lungs, in addition, thanks to an unfortunate design decision, the steering wheel bar sat just at an angle in most of the car types that it was directed towards the heart of the driver. When tumbling forward, it pierced the human body through at a place where it was least desired. The blow was often fatal even when the metal did not penetrate the chest. Despite its thickness, aorta becomes cracked relatively easily. If the collision concurs with the contraction of the heart just when blood is being pressed out, the chance of aorta rupture is decreased. As a result of such accidents, the corpses were seated in the driver's seat of mechanically accelerated car simulators in order to imitate the powers of head-on collisions for the purposes of designing a steering wheel bar that would collapse as a result of the blow and would absorb enough power to prevent the heart and the major blood vessels from being severely injured.

Lateral collisions:

The three-point seat belts and the air bags on the dashboard are designed to prevent head-on collisions, but can do not much to avoid injuries arising from lateral collisions. In the case of the latter, there is neither car bonnet breaking as folded, nor roof rack, front seat that would ward off the power of the blow; there is only a door of 5-10 cm thick. In case of lateral air bags, the sensors should immediately perceive the blow, which the former ones were unable to do. Fractures of the collarbone, the shoulder blade and mainly rib fracture can occur, because the latter are much more sensitive to lateral effects. In the case of lateral collisions, lateral shaking occurs, which is especially ill-fated of causing humans to fall into a coma. In the case of lateral collisions, the speed is doubled as compared to head-on collisions.

Limb injuries:

Nowadays the shock resistance of the vital organs of human body is well-known, and corpses are recruited only to examine peripheral parts, such as ankles, knees, legs and shoulders. Related injuries of those died in accidents, and those survived as a result of the protective effect of airbags but suffered limb injuries were of help with it.

Pedestrian-vehicle collisions:

Prepared corpses were used to imitate such collisions, as well. Pedestrians get hit up rather than run over by cars. The buffer hits the calf, the bonnet hits the hip and hits up the legs and swings it up over the head. The pedestrian turning cartwheel lands on his head or chest on the bonnet or the windscreen. Depending on the speed of the collision, s/he may turn more cartwheels and at this time land on the top of the car and then slides down on the side of the car to the pavement. S/he may as well remain on the bonnet, but it generally means that s/he has broken the windscreen with her/his head.

Summary:

In imitating car accidents, no one can better replace a living person than a dead person. Data of a blow not surpassing the injury threshold are worth almost nothing. Persons are needed that can feel no pain, namely, human cadavers. If the car manufacturers are familiar with the pressure that the skull, the spine or the shoulders can resist, they will be able to design cars, in which such injuries can be avoided in case of a collision.

One can say that the much talked-of quote of "Mortui vivos docent" *(The dead teach the living)* appearing on the wall of several mortuaries is still true also in the field of road safety.

Your attention is highly appreciated.

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MEASURES OF THE CARNITINE: A TLC DENSITOMETRIC ASSAY

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L-Carnitine ((R)-3-carboxy-2-hydroxy-N,N,N-trimethyl-1-propaminium hydroxide inner salt) is a vitamin-like amino acid derivative, which is an essential factor in fatty acid metabolism as acyltransferase cofactor and in energy production processes, such as interconversion in the mechanisms of regulation of cetogenesis and termogenesis, and it is also used in the therapy of primary and secondary deficiency, and in other diseases. It is used

as a carrier to transport long-chain fatty acids into the mitochondria of a cell for betaoxidation to produce energy, and participates in the control of the mitochondrial acyl-CoA/CoA ratio, peroxisomal oxidation of fatty acids, and the production of ketone bodies. The determination of carnitine and acyl-carnitines can provide important information about inherited or acquired metabolic disorders, and for monitoring the biochemical effect of carnitine therapy. To date, the regulation of carnitine biosynthesis in mammals is not completely understood. In humans, the endogenous carnitine pool is maintained by biosynthesis and absorption of carnitine from the diet. Carnitine has one asymmetric carbon giving two stereoisomers D and L, but only the L form has a biological positive effect, thus chiral recognition of L-carnitine enantiomers is extremely important in biological, chemical and pharmaceutical sciences. In order to get more insight into carnitine metabolism and synthesis, a sensitive analysis for the determination of the concentration of free carnitine, carnitine esters and the carnitine precursors is required. L-carnitine has been investigated in many biochemical, pharmacokinetic, metabolic and toxicokinetic studies, and thus many analytical methods for its study have been developed and published, including chromatographic [1-5], mass spectrometry [6-9], electrophoretic [10-13], spectrophotometric [14, 15], fluorimetric, enzymic and radioenzymic, radioisotopic, and potentiometric [16] techniques. Several methods have been described for the determination of carnitine in food, dietary supplements, pharmaceutical formulations, biological tissues and body fluids. A non-chiral HPLC method with circular dichroism detection for the determination of carnitine enantiomers in dietary supplements and pharmaceuticals was developed [17]. A LC-MS method for the determination of the free carnitine in milk-based infant formula and health-care products was conducted [18]. Starkey et al. developed RP-LC-MS/MS method for the determination of free and total carnitine in infant formula and raw ingredients [19]. Ion pair chromatography with indirect conductimetric detection for the determination of L-carnitine in food supplement formulations was developed and validated [20]. Promisila et al. tested a CE method for the quantification of carnitine in different types of foodstuffs [21]. A CE–ESI–MS/MS method was applied to the determination of L- and D-carnitine in pharmaceutical formulations, infant formulas and in 22 dietary food supplements was reported [22-24]. Seline et al. re-validated some methodological parameters of the radioenzymatic assay, and determined total-, free- and acyl-carnitine concentrations in a wide range of food samples of animal and plant origin [25]. Determination of L-carnitine levels in various food, including meat, dairy products, and fruits and vegetables using radioisotopic assay was reported [26].

Nowadays the studies of carnitine for medical applications were becoming more and more popular. To study the behavior of L-carnitine in disease and therapy investigators need a simple, rapid, accurate and specific procedures. Carnitine has been investigated in many biochemical, pharmacokinetic, metabolic studies and thus many analytical methods have been developed and published. Over the past years TLC has been successfully used for analysis of pharmaceuticals, plant and biological materials. The major advantage of TLC is that several samples can be run simultaneously using a smart quantity of mobile phase, thus reducing analysis time and cost per analysis.

In the presented work a new, simple, rapid, precise and accuracy method for the identification and determination of L-carnitine in dietary supplements, by TLC with UV densitometric detection, after ninhydrin based derivatization reaction has been developed and validated for linearity, precision, accuracy, selectivity and specificity in accordance with ICH guidelines.

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ANALYTICAL PROCEDURE FOR THE DETERMINATION OF β-SITOSTEROL

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Vegetable oils, known for centuries, are necessary components of human diet. One of vegetable oils is pumpkin seed oil *(Cucurbita pepo L.)*. The natural unmodified oil of good nutritive values is gained by cool and dark pressing of unroasted pumpkin seeds without air. Pumpkins and their seeds, were a celebrated food of the Native American Indians who treasured them both for their dietary and medicinal properties. Pumpkin seeds have recently become more popular as research suggests that they have unique nutritional and health benefits. Pumpkin seed oil looks very dark green. Against the light it has a red brown color. The taste is intensive with a little nutty flavor. Its chemical composition includes unsaturated fatty acids, mainly linolenic, oleic and palmitic acids that share approximately 80%, and vitamins E, B1, B2, B6, C, D and K as well as β–carotene and inorganic compound, i.e. potassium selenium and zinc. Biologically active components such as phytosterols, squalene, phytosterinen and cucurbitin play an important role and thanks to it the oil is widely used both in cosmetic and pharmaceutical industries. Chewing a handful of dried seeds every day or

taking the oil for salads and for dips can easily give a similar preventive supply. A lot of antioxidant against the free radicals in the blood helps to keep young and healthy. Pumpkin seed oil is used in treatment of the early stage of prostate, atherosclerosis and bladder and urinary tract diseases, to regulate metabolic and hormonal processes in the body and also against parasites.

Most of analytical research studies pertaining pumpkin seed oil are conducted to find any adulterations. For this purpose the chromatographic procedures for detection and identification constituents in oils are mainly employed, for example HPLC–MS, HPLC–GC, HPLC–UV, HPLC–refractive index detector, HPLC–atmospheric pressure chemical ionization, GC with flame ionization detection, GC–MS [1-5], HPLC with fluorimetric detection [6], RP–HPLC [7, 8], and capillary electrochromatography [9] were also used.

β-Sitosterol is one of several phytosterols (plant sterols) with chemical structures similar to that of cholesterol. Alone and in combination with similar phytosterols, it reduces blood levels of cholesterol, and is sometimes used in treating hypercholesterolemia. β-sitosterol inhibits cholesterol absorption in the intestine [10]. It is used in herbal therapy, especially in the treatment of benign prostatic hyperplasia [11], and for the treatment of prostatic carcinoma [12].

In the presented work a chromatographic-densitometric method was developed to identify and determination of β–sitosterol in pumpkin seed oil in the dietary supplements and pharmaceutical products. Chromatography was performed on silica gel 60 F_{254} TLC plates, with toluene – ethyl acetate – glacial acetic acid (15 + 4 + 1, v/v/v) as a mobile phase. Densitometric detection was performed at 525 nm. The method was validated in terms of linearity, sensitivity, selectivity, precision, and accuracy. This method is simple, rapid and easily adaptable for routine analysis.

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NEW FORMS FOR PREPARATION OF DENTAL FILLINGS AND RESEARCH ON ZINC RELEASE FROM THEM

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Abstract

Zinc based cements have been used widely as temporary restorations during the treatment of teeth. Currently, these cements have been also applied for temporary cementing, as an intermediate base between metallic restorations and tooth structures, also in pulp capping procedure or as a surgical packing material used after some periodontal procedures.

Solid forms of dental fillings used in this research were prepared by compression of dental materials in Korsh EK0 tabletting machine with 4 mm diameter flat tablet punches. Solid form of Thymodentin was prepared by compression of Thymodentin with water in 4:1 ratio. Same solid forms of fillings containing zinc and eugenol were obtained by compression of weighed and mixed substances in 10:1 ratio. Solid forms of temporary dental fillings containing Thymodentin, zinc oxide, Coltosol F®, were obtained by compression of each

substance individually. Taking into consideration poor technological properties of this substances, matrix was filled manually and then compressed. In order to improve and accelerate the process of obtaining zinc oxide solid dental form, wet and dry granulation was applied. Dry granulation consisted of compacting zinc oxide, calcium phosphate, magnesium aluminosilicate and colloidal silica mixture with flat tablet punches (20 mm diameter). Then compacts were grinded and compressed after talc addition into 4 mm diameter solid forms. Wet granulation of zinc oxide was done using 10% hydroxypropyl methylcellulose solution as binder solution. This granulate was then mixed with calcium phosphate, magnesium aluminosilicate, colloidal silica and talcum and then compressed. Solid forms of dental fillings weighted 60-70 mg. Subsequently to preparation, solid forms of dental fillings were immersed in artificial saliva (Arvidson) for 2, 48 and 168 hours. After this periods concentration of zinc released from each temporary dental filling was measured by ASV method.

It was found that, self-prepared fillings were more rigid than factory made and in case of self-made fillings zinc concentrations were lower.

NEW MULTIPURPOSE ELECTROCHEMICAL ANALYZER FOR BIOMEDICAL APPLICATIONS

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At the Department of Analytical Chemistry of the AGH University of Science and Technology for the past 30 years instruments for polarographic and voltammetric methods were developed and constructed. Presented herein device is a new modernized and improved construction of the analyzer. In this construction, dedicated to measurements of low levels of the recorded values, up-to-dated fully integrated chips were used.

The multipurpose analyzer 8KCA exhibits excellent measuring features, may be used for control of many different electrochemical sensors, such as: mercury film electrodes (Hg(Me)FE), renewable solid electrodes, microelectrodes, corrosion cells, which can be fully integrated with the presented analytical device [1]. What is more, it is the only instrument

which fully supports the Controlled Growth Mercury Dropping Electrode (CGMDE) [2]. A wide range of electro-analytical techniques can be executed with this analyzer. These are: staircase, normal pulse, differential pulse, square-wave, linear sweep voltammetry, stripping voltammetry, chronoamperommetry; to list the most commonly used. Also, numerous measuring parameters in each method may be flexibly chosen, what gives practically unlimited experimental possibilities. The same refers to the available, built-in advanced signal processing procedures [3-7], including smoothing and baseline correction using various algorithms. The recorded curve is visualized in real time, stored and may be separately, or as a part of the set of curves, transformed and interpreted in almost unlimited manner. Obviously the appropriate procedures of quantitative analysis (calibration with different strategies) are also provided.

The analytical usefulness of the presented electrochemical analyzer can hardly be overestimated. It can be applied in scientific investigations of electrode processes, testing of modern sensors, qualitative and quantitative determination of non-ionic surface–active substances, corrosion processes. What should be stressed, the instrument can readily be used in routine analysis of vast number of analytes in artificial, environmental and pharmaceutical samples.

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ANALYSIS OF PHYSIOLOGICALLY ACTIVE ELEMENTS IN FRUITING BODIES AND MYCELIUM FROM *IN VITRO* CULTURE OF SELECTED EDIBLE MUSHROOMS

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Of about 1.5 million species of mushrooms about half of them are classified to macro fungi of which more than 2000 is edible, but only 25 which are found in nature are considered as food and only a few manage to obtain in commercial cultivates. In the last decade the interest in the biological activity of edible mushrooms is growing. Many studies have helped to prove that the composition of amino acids which occur in mushrooms are comparable to animal protein, which is important for the human diet, especially since more and more diseased are caused by animal meat.

Edible mushrooms are increasingly investigated due to the production of biologically active primary and secondary metabolites. Biologically and therapeutically active metabolites of fungi are used to treat such serious diseases as cardiovascular diseases, diabetes, atherosclerosis and cancer. Some of the metabolites exhibit antiviral, antibacterial and anthelmintic activity. Other widely studied groups of compounds contained in mushrooms are phenolic compounds, terpenoids, indole compounds, vitamins and bioelements (eg. selenium). Selenium is an element of the active center of glutathione peroxidase, which fulfills in the human body one of the most important antioxidant function and is needed in a daily dose of about 60 μg. This bioelement was found in more than 200 species of mushrooms, eg. in Boletaceae family – *Boletus edulis*, selenium exists in the amount of 20 μg/g d.w.

Another important bioelement of the physiological importance which can be found in edible mushrooms are zinc. The effects of zinc deficiency have been described. A characteristic feature for the mycelium of higher fungi is taking from the environment and accumulation of easily digestible mineral components, which are unevenly distributed in them and usually their level is higher in the caps than in the shafts. The first reports on the accumulation of Hg in the fruiting bodies of Basidiomycota mushrooms come from 1973. Researchers from the University of Gdańsk conducted numerous studies of elements in selected species of edible mushrooms collected in northern Poland. The following elements were determined: K, Na, Mg, Ca, Fe, Zn, Mn, Cu, Pb, Cd, Hg and Ag.

Due to the large capacity of mycelium to absorption metals and the possibility of screening in laboratory, *in vitro* cultures of selected edible mushrooms *Cantharellus cibarius* – Chanterelle, *Boletus badius* – Bay bolete are model for studying the metabolism and accumulation of microelements. The aim of the study was derivation of *in vitro* cultures from the fruiting bodies of these species, then analysis of the content of microelements in *in vitro*

cultures using AAS; evaluate the accumulation potential of elements in order to enrich the mycelium in the bioelements to create a new dietary supplement. As a result of analyses we obtained in fruiting bodies of Chantarelle Zn – 95.41 µg/g d.w., Cu - 43.57, Mg – 1004.08; Fe – 35.18, Ni – 1.88 Cd – 0.096; in mycelium of *in vitro* culture of this species: Zn – 131.91 µg/g d.w., Cu – 12.42, Mg – 541.83; Fe – 5.85, Ni – 0.34, Cd – 0.006. In case of Bay bolete the results were Zn – 172.08 µg/g d.w., Cu - 43.55, Mg – 7.23; Fe – 6.35, Ni – 0.35 Cd – 0.042; in mycelium of *in vitro* culture of this species: Zn – 442.70 µg/g d.w., Cu – 4.17, Mg – 6.16; Fe – 17.15, Ni – 0.62, Cd – 0.005. Results are showing that *in vitro* culture of both species under study are a good sources of zinc.

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POLYPHENOLS IN COCOA (*THEOBROMA CACAO* L.) CAN IMPROVE BRAIN FUNCTION

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Health benefits of cocoa have been studied recently with a major focus on degenerative diseases such as cancer and coronary heart disease. Even if the relationships between

chocolate consumption and elevated mood are well known, there are only a few detailed studies on active components and exact mechanisms. However, it is known that dietary flavonoids may prevent of neurodegenerative diseases. Dietary sources of polyphenols are wine, tea, fruits, vegetables, cereals and nuts, but cocoa is probably the richest one [3]. Cocoa polyphenols are catechins (37%), anthocyanins (4%) and proanthocyanidins (58%). The major polyphenolic compounds in cocoa are catechin, epicatechin and their dimmers procyanidin B1 and procyanidin B2 [1]. Cocoa is also rich in methylxanthines (caffeine, theobromine and theophylline) and some studies suggested that methylxanthines may be responsible for mood regulatory and antidepressant activity of cocoa and chocolate, but exact mechanisms are not known [6]. Cocoa seed contains relatively high amount of magnesium, copper and selenium. It is proposed that methylxanthines, peptides, and minerals, especially magnesium, could synergistically or additively enhance antioxidant properties of cocoa and cocoa products. Some investigations suggested that consumption of cocoa may improve blood flow in brain grey matter and enhancing brain function. Cocoa flavanols may increase in the circulating pool of nitric oxide that helps dilate blood vessels and keeps them pliable [2]. There are reports that cocoa polyphenols may help with chronic fatigue syndrome [5]. The antidepressant-like effect of cocoa polyphenolic extract have been showed in behavioral tests with Wistar–Unilever rats [4]. It is suggested that cocoa extract significantly reduced expression of depression behavior in force swimming test and this specific effect might be related to high content of active polyphenols in cocoa seed. More studies are necessary to discover the mechanism of action of cocoa polyphenols and its role in the prevention and therapy of mood disorders.

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STUDY ON ROLE OF TRANSMISSION OF *HELICOBACTER PYLORI* BACTERIA VIA DRINKING WATER DETECTION OF *HELICOBACTER PYLORI* IN WATER USING PCR METHOD

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The route of transmission for *Helicobacter pylori* has not been clarified, and even though culturable *H. pylori* has never been isolated from drinking water distribution systems (DWDS). Molecular techniques such as PCR have detected the presence of *H. pylori* DNA in potable water, indicating that this environment could act as a reservoir for this bacterium. Although the natural niche for H. pylori is the human stomach, for widespread infection to occur this microorganism may need to survive in the external environment (Brown 2000).

Many transmission routes for *H. pylori* have been proposed and have included gastric-oral (Raymond et al. 2008), oral-oral (Megraud 1995), faecal - oral (Raymond et al. 2008), zoonotic (Fox 1995) and water or food borne (Hulten et al. 1996; Herrera 2004). These proposed transmission routes indicate that *H. pylori* infection occurs through multiple acquisition pathways (Goodman and Correa 1995). Other research also supports an association between *H. pylori* infection and consumption of untreated well or spring water (Carballo et al. 1997; Benson et al 2004; Reavis 2005). Further evidence concerning the importance of water as a transmission route of *H. pylori* was stressed by Fujimura who collected and analysed a total of 24 water samples from the upper, middle and downstream reaches of four Japanese rivers for evidence of *H. pylori* detection by nested polymerase chain reaction (PCR). The conclusion from this study indicated that water, in the natural environment, could be a risk factor for *H. pylori* transmission (Fujimura et al. 2004).

In Poland, especially in suburban areas, the number of systems for discharging sewage to sewage treatment plants is inadequate, many farms and households either have their own small wastewater treatment plants, which do not always function properly, and may become contaminated with bacteria including *H. pylori* or in worse cases, waste is disposed of by releasing pollutants into nearby rivers, streams or roadside ditches. Some farms have leaky septic tanks often built near wells from which they derive all their household water.

To date there has not been any research conducted in Poland to find the presence of *H. pylori* in water. The research project "Detection of *Helicobacter pylori* in drinking water samples. In what way is the water contaminated and what is the source of contamination?" we want to pursue, will therefore be an innovative project that will provide valuable information about the various elements found in samples of water as a potential reservoir of *H. pylori*, and thus as a source of infection.

Keywords: Helicobacter pylori, real-time PCR, sewage, survival drinking water

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PHYSICAL ACTIVITY AND DEPRESSION

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Abstract

Individuals suffering from depression, apart from main psychological symptoms of the disease, often experience reduced physical efficiency. Similarly to patients with cardio-vascular diseases, occurrence of depression might be connected with sedentary, inactive lifestyle. Individuals who are not familiar with regular physical activity are more exposed to occurrence of depressive symptoms comparing to those who exercise regularly.

In recent years, exercise has been increasingly prescribed as a therapeutic adjunct in the treatment of depressive disorders. Psychological (e.g. psychotherapeutic), psychosocial (e.g. cognitive behavioral therapy) and biological (pharmacotherapy) treatments are the most common treatments being offered. The large variety of therapeutic interventions give rise questions of clinical effectiveness and side effects. Physical activity is inexpensive with few, if any, side effects.

Accumulating evidence suggests exercise training after diagnosis of depression may improve functional capacity, muscular strength, quality of life and reduce fatigue. Some studies have demonstrated moderate to large reductions in depressive symptoms as the result of exercise.

The mechanism by which physical activity may reduce depressive symptoms in not well understood. Biochemical or physiological explanations include the role of endogenous opiates, endocannabinoids, brain neurotransmitters, anti-inflammatory cytokines, increased cerebral blood flow, and a change in hypothalamic-pituitary-adrenal axis function.

Hypothesized psychological mechanisms include distraction and enhanced self-efficacy, behavioral activation, sense of achievement and self-determination.

The relationship between physical activity and depressive symptoms may be reciprocal. People who experience reduced depressive symptoms may be more likely to continue physical activity performance.

On the other hand there is no clear evidence what type of training or exercise should be prescribed in rehabilitation programme for people with depression. Some studies showed that especially aerobic exercise with supervised low-intensity intervention may result in the reduced depressive symptoms and are more effective than moderate or high intensity interventions.

Appropriate physical therapy is of clinical importance in whole treatment process in children and adults with brain tumors. Patients with tumors of central nervous system, apart from physical symptoms, may experience fear from death, disease relapse, body image changes, side effects related to tumor or adjuvant treatment that can contribute to the depressive symptoms. Rehabilitation can improve functioning in activities of daily living and quality of life in patients with brain tumors and it may lead to reduced depressive symptoms.

In summary, exercise may improve the state of subjects with major depressive disorder. Although inconclusive, some evidence suggests that exercise may be useful as a complementary therapy in the treatment of depressive disorders. The main problem in cooperation between physiotherapist and a person with depression is simply to initiate physical activity, therefore pharmacotherapy and psychotherapy are sometimes indispensable elements of treatment.

RILATOJ INTER TIROGENAJ MALSANTIPOJ KAJ STERILECO

Trarigardo de la fakliteraturo kaj personaj spertoj, rezultoj

FARAGÓ Katarina

u.HÓDMEZŐVÁSÁRHELY / HUNGARIO

RESUMO: LA nombro de la tirogenaj malsantipoj dum 5 jaroj duobliĝis. La graveco de tiuj ĉi malsantipoj estas signifa je la sterileco laŭ la plej freŝaj fakliteraturaj indikoj. La prelego prezentas la bazajn informojn pri tiu malsantipo kaj rilatojn inter tirogenaj malsantipoj kaj sterileco - kun prezentado de la fotoj pri la beboj kiuj naskiĝis pere de helpo Yumeiho® terapio..

7-a bildo :vertebra kolumno: nuka-, dorsa-,lumba vertebraro, sakro

8-a bildo: La precipaj endokrinaj glandoj de la vertebruloj

Pineala glando, hipofizo, tiroido /tiroidaj glandoj / paratiroido, timuso, surrenaj glandoj,pankreato,ovario orkido.

Nomo de la tiroida glando devenas el tiu situacio, ke ĝi troveblas je ambaŭa parto de a tireoida kartilago.La hormonon ĝi konservas en gland-elkondukilo kaj de tie la hormono laŭ la bezono de la korpo atingas la sangocirkulon.

La maso de la normala homa tiroido estas inter 10 kaj 20 gramoj, ĝia larĝeco estas inter 5 kaj 8 centimetroj, ĝia alteco esta inter 1.5 kaj 2.5 centimetroj kaj ĝia dikeco estas inter 1 kaj 1.5 centimetroj. Ĝi troveblas sur la kolo inter la antaŭkonveksa kuspido de la tireoida kartilago kaj jugularo-sternumo.

La plej lastaj eksperimentoj okazigite/ farite en loĝantaro de la , grandaj eŭropaj populacioj tion prezentis, ke la malsanoj de la tiroido estas jam popolmalsano, ĉar aperas la hipotiroidismo en 4,4 %-oj – kaj la hipertiroidismo en 1,4 %-oj en la tuta loĝantaro.

La problemo estas tio, ke la tirogena malsano ofte (en 4.0 %-oj) aperas en milda, malfacile diagnozebla formo / tipo. Sinsekve – ŝajne sen ĉiuj kazoj evoluiĝintan hipotiroidismon oni nomas kiel „idiopatia malsano" de la tiroido, estiĝante pro malsano de la imuna-sistemo –

La nomo de la pligrandiĝo de la tiroido estas strumo. En ĝi troveblaj determineblaj glandoj estas la la tiroid-glandoj, la glandiĝeco de la tiroido estas plej oftaj endokrinaj anomalioj

La normala tiroido estas homogena, adenoida , havas saman temperaturon kun sia medio, ne estas sentema.

PLIGRANDIĜOJ DE LA TIROIDO SEN FUNKCIO-ŜANĜO

1. NORMOFUNKCIA TIROIDO
2. GLANDA STRUMO
3. ESTIĜO DE LA CISTO/KISTO/
4. MALIGNOJ DE LA TIROIDO

Pri rilato inter la tiroidfunkcio kaj jodo oni jam tiam atentis, kiam oni ne sciis, ke mem la tiroido konservas la unu kaj kvinonan parton de la jodenhavo de la homa organizmo.

PERCEPTEBLO DE LA JODO

MALVARMA GLANDO /ne absorbas jodon /

VARMA GLANDO / absorbas jodon same kiel sia cirkonstanco / medio /

VARMEGA GLANDO / pli absorbas la jodon /

Se absorbas jodon nur la glando, la plia parto de la strumo ne, tiam mencieblas la diagnozo: toksika adenomo.

La tiroid-malignomoj estas sperteblaj kiel skleraj glandoj. Ĉi tiuj kroĉas sin al sia medio, ne sekvas la glutmovojn, eĉ en pli serioza kazo jam aperas la metastazoj.

Inter la grandeco kaj kvanto de la hormona-modifiĝo de la tiroido ne estas strikta interrilato.

KAŬZOJ DE LA DIFUZA NORMOFUNKCIA PLIGRANDIĜO DE LA TIROIDO

1. Mankon de la jodo kaŭzas:
    a. Endemia strumo
    b. Adolesko
    c. Gravedeco
2. Sporadaj kazoj
3. Inflamo
4. strumiga menuo
5. diversaj / specialaj uzataj medikamentoj
6. denaskaj perturboj de sintezo je la tiroid-hormono
7. perifera tiroid-homon-rezisto

La plej ofta kaŭzo de la elformiĝo de la normofunkcia endemia strumo estas la manko de la jodo. La jodo eniĝas la homan organizmon kun la nutraĵo, en adolta periodo estas bezonata po tago 150 ug-ojn , dum la gravedeco aŭ mamnutrado oni bezonas po tago 200 ug-jn.

La jodo estas grava baza parto de la tiroid-hormonoj (T 3 kaj T 4), tio estas 65%-oj de la molekula maso de T 4

La malmult-kvanta jodabsorbiĝo kaj ties sekvenco estas tre ofta jod-mankanta stato, en la mondo ĉiu 4-a homo havas saman problemon ! En 80 %-oj de Hungara teritorio aperas tiu jodmankanta simptomo, sed dank' al specialaj enmiksiĝoj / kuirsalo, jodigo de unuecaj nutraĵoj / tiu nombro montras pliboniĝon en Hungario, nur ĉiu 5-a homo havas tiun problemon.

. La sporada normofunkcia strumo ne estas jodmankanta. Je sia estiĝo ne havas rolon la jodmanko. En la anamnezo rolas la genetikaj faktoroj, autoimun-inflamaj procezoj kaj ceteraj medikamentoj.

Ofta manĝado de la unuopaj tiocianat-enhavataj nutraĵoj (ekz.brasiko,florbrasiko, brokolo ktp.) per inhibicio de la tirozin-jod-inanicio kreskigas la strumigenan efikon de la jodmanko.

Grandecon de la tiroido povas pligrandigi ankaŭ la unuopaj medikamentoj ekz. la litio – ĝi inhibicias la hormon-sekrecion, la amiodaron- havantan jodon – efikas alie al la tiroido, kaj la saliciloj, indometacin, fenilbutazon, sulfanilureoj

Estas novaĵo la eksperimento de la duobla efikeco de selen-karenco, ĉar inhibicias la periferian malkombiniĝon de tiroksino, nome grandiĝas la enhavo de T4 en la sango.

La inflamajn malsantipojn de la tiroido latine oni nomas kiel tiroidito.Ĉi tiuj estas la plej oftaj endokrinaj ,malsantipoj, ni klasifikas en tri klasoj: akuta, „sub-akuta" kaj kronika malsantipoj de la tiroido.

La akuta tiroidito malofta malsano. En tiu kazo en la histojn de la tirioido diversvarie sorbiĝas la patogenaj mikroboj kaj tie kaŭzas inflamon. La malsanulo havas altan febron, frostotremon kaj la tiroido estas dolora, grandiĝas.La nivelo de la tiroidaj.hormonoj montras neniun malsimilecon.

La kaŭzo de la subakuta granula toroidito ne estas precize konata, plejverŝajne la virus-deveno estas la kaŭzo/origino/.Subite komencante malsantipo, la simptomoj estas:

Supraj spirkanalaj kataraj simptomoj

Febro

Muskoldolor-sentoj

Ŝveliĝas mem la tiroido kaj

Estas tre dolora

La doloro radias al direkto de la oreloj,-

tial la malsanuloj komence vizitas la orelkuraciston/otologon/ Kompreneble tiu fakulo trovas dum la ekzameno nenion…

Komence pli altan tiroidhormon-nivelon kaŭzas tiuj hormonoj,kiuj estas devenintaj el inflama tiroido, el ties inflamitaj histoj – venante en sangocirkuladon. En tiu periodo estas malalta la hormon-nivelo, sed tiu povas renormaliĝi kiam la tiroido funkcias denove normale.

Subakuta limfocita tiroidito estas ofta sindromo, ĉirkaŭ en 50%-oj ĉeestas.Je simptomoj de la sendolora pligrandiĝa tiroido estas komence alta-, poste malalta la tiroidhormon-nivelo.

La elformiĝon de tiu malsantipo la fakuloj klarigas kiel malsantipo de la imuna-sistemo de la organizmo. Iu vario aperas tuj post la nasko – „tiroidito post nasko" = latine pospartum thyreoditis

La kronikan limfocitan tiroiditon oni nomas laŭ unue priskribinto HASHIMOTO-tiroidito –ofta malsantipo, en virinoj pli ofte aperantaj.

En la estiĝo ofte aperas la genetika deveno.La plej ĉefaj karakterizaj simptomoj estas: la sublaboranta / „maldiligenta" / tiroido. La kaŭzo estas tio, ke la imun-sisitemo de la homa organizmo produktas aktikorpojn kontraŭ sia tiroido, kiu okazas daŭre la nekrozon de la ĉeloj.

Kiam pli multaj tiroid-ĉenoj malfunkciiĝas – nur tiam aperas la simptomoj.

Bedaŭrinde la kialo/kaŭzo de tiu malsantipo ne estas ankoraŭ konata, do la terapio ne ekzistas….

Ĉu estas problemo, se oni ne rekonas la tiroid/malsanon je ĝustatempe?

Pli frue rekoni la specialajn simptomojn estas tre grava,ĉar estas rizikofaktoro de diversaj malsanoj, ekz.:

Rizikofaktoro de la sterileco, oftaj abortoj,anoreksio,dikeco ktp.

Por la rilato inter hormon-nivelo kaj sterileco mi jam aŭdis de ginekologistoj, sed antaŭ Yumeiho®-terapio mi petis ĉiam la radiologian foton pri la vertebraro, ĉefe pri lumbala zono/ parto. Ĝustigante tiun ĉi parton mi pensis, ke estas sufiĉa! – sed la informiĝo pri laboratoriaj rezultoj ekz. TSH, T3 T4 la nivelo de la prolaktino jam donis pli multon da rezulto: kiam estis normalaj tiuj rezultoj, estis ĝustigita la vertebroj kaj lumbala parto: La gravedeco aperis! Kunlaborante kun ginekologisto, endokrinologisto la rezulto estas jam73 gravedaj patrinoj preskaŭ dum 10 jaroj.nun 9 beboj atendas la naskiĝon...

Yumeiho masaĝtipo jam estas konata en pluraj landoj, minimume 50 landoj. Aŭtoro/ kreinto estis Dr-o SAIONJI MASAYUKI (Tokio, Japanio)

La delokiĝo de koksostoj estas la ĉefa kaŭzo de doloroj en diversaj partoj de la homa korpo, speciale zono de lumba vertebraro kaj koksostoj, samtempe oni rimarkas ofte ĉe la pacientoj la malsanojn de internaj organoj. Tiu ĉi kuracmetodo – Yumeiho® terapio – ebligas ĝustigi la (ostajn) artikojn de la tuta korpo, malstreĉigi muskolojn kaj ties konektitajn histojn kaj efike forigas patologiajn ŝanĝojn.

Inter miaj 100 pacientoj minimume 90 pacientoj havas iu ajn movorganajn malsanojn, la bone aplikata Yumeiho® terapio povas malfortigi, -eĉ ĉesigi – la fortan doloron.

La terapio estas kompleta – la familia kuracisto, ginekologisto, endokrinologisto – kaj Yumeiho®-terapiisto (japana speciala masaĝtipo) kunlaboras.La rezulto estas rezulto…

La prelego estis prezentita dum UK en Danio, la 24-an de julio, 2011, en jarkunveno de UMEA. La literaturo estas ĉe la aŭtoro, bonvolu peti.

****

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Sube mi prezentas diplomon ricevitan de aktula Direktoro de la Internacia Instituto de Preventa Medicina Praktiko de Majestro Kitami Toshiharu.

認　　定　　証

DIPLOMO/DIPLOMA

初 級

La Komenca Kurso

The Beginner Course

氏名

Nomo/Name:

殿

貴殿は湧命法初級基礎研修課程を修了した事を証し此処に初段・２段と認定致します

Ĉi tie la skribinto atestas, ke vi finis la unuan kaj duan,

elementan bazan kurson de Yumeiho.

English version here・・・・

年　　月　　日

Dato: Jaro/monato/tago

Date: Year/month/day

国際予防医学実践研究所

Internacia Instituto de Preventa Medicina Praktiko

International Institute of Preventive Medicine Practice

湧命法センター代表　北 見　俊　治

Direktoro de Yumeiho Centro

Director of Yumeiho Center Kitami Toshiharu

THEOPHYLLINE DERIVATIVES WITH ADRENOLYTIC PROPERTIES

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Leszek Nowiński, Joanna Knutelska

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Ventricular fibrillation (VF) is a major cause of death in acute myocardial infarction, in both the pre-hospital and in-hospital phases. The effective prevention of VF is therefore a most important aspect of the management of patients with acute myocardial infarction. At present has not completely effective and safe antiarrhythmic agents in these arrhythmias.

Searching for compounds with potential activity on cardiovascular system within the group of 7,8-disubstituted derivatives of theophylline, we obtained new 7-β-hydroxy-γ-(N_4-phenoxy-ethyl-piperazine)-propyl derivatives. Our research showed that a some theophylline derivatives had marked significant antiarrhythmic (adrenaline-induced) and hypotensive actives. This compounds had affinity for α_1 - and α_2 -adrenoceptors and antagonized the pressor response elicited by epinephrine, norepinephrine and methoxamine. The observed effect suggested that these compounds had adrenolytic properties.

As a continuation of this study, a series of novel theophylline derivatives with adrenolytic properties was evaluated for antiarrhythmic, electrocardiographic and hypotensive activity. Some of them displayed antiarrhythmic activity in adrenaline and barium chloride induced arrhythmia and in the rat coronary artery ligation-reperfusion model. This compounds slightly decreased the heart rate, prolonged P-Q, Q-T intervals and QRS complex. Among them, CH-21 [(7-β-hydroxy-γ-(N_4-phenoxy-ethyl-piperazine)-propyl-8aminotheophylline] compound showed excellent antiarrhythmic activity. The present results suggest that the antiarrhythmic effect of compound CH-21 is related to their adrenolytic properties.

APPLICATION OF VOLTAMMETRIC METHODS IN QUANTITATIVE ANALYSIS OF VITAMINS

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Out of the wide range of organic compounds essential for living organisms including humans, vitamins constitute highly diverse group of compounds which can not be synthesized by anabolic processes [1]. Due to complexity of their chemical structure and concentration level which should be determined, it is of utmost importance to develop specific and sensitive methods of qualitative and quantitative analysis of vitamins. As vitamins induce reasonable polarographic and voltammetric responses [2-4], without interferences resulting from the presence of other compounds in the analyzed samples, these methods can be really useful in this respect.

The use of renewable mercury film – modified silver solid amalgam annular band electrode (MF-AgSAE) [5] as a working electrode in B_1, B_2 and C vitamins determination in pharmaceutical products was proposed herein. The MF-AgSAE, refreshed before each measurement, demonstrates many properties similar to those of the hanging mercury electrode. Preparation of the MF-AgSAE electrode is simple and reproducible ($\leq$2%). The MF-AgSAE is characterized by long-term stability, more than 2 thousand measurement cycles can be performed on a single sensor.

The procedures of measurements, using the staircase, normal pulse and differential pulse voltammetry were optimized in respect to preconcentration conditions, supporting electrolyte composition and instrumental settings.

Interferences caused by organic surface active substances were estimated by means of studies of effect of Triton X-100 additions (5 mgL^{-1} and 60 mgL^{-1} for B_1 and B_2 vitamins, respectively). In such solutions, the electrode stability and repeatability was controlled.

An appropriate method of the electrode electrochemical conditioning prior to analysis was also worked out.

The developed methods were validated and successfully applied by analysis of the standard substances and a set of commercially available pharmaceutical products containing B_1, B_2 and C vitamins.

This work was supported by AGH University of Science and Technology grant (Project No. 11.11.160.799)

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POTASSIUM-SELECTIVE ELECTRODE USING CARBON BLACK FOR CLINICAL USE

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Potassium ion is routinely measured by ion selective electrodes or by flame photometry. It was shown in [1] that carbon black (CB) can be successfully used as an intermediate layer in potassium solid-state ISEs (SC-ISEs). The CB exhibit many excellent properties such as high conductivity, large surface area, high hydrophobicity and low production cost. Considering the mentioned qualities it becomes obvious that the carbon black is the most advantageous material for the fabrication of the solid-state selective electrodes as it is demonstrated by the developing of the K^+-sensitive SC-ISEs.The performance of the new electrodes was evaluated by the determining K^+ with an ion-selective membrane that contained the well known valinomycin ion carrier. The new electrodes had a Nernstian slope, a high stability, the reproducibility of the standard potential values and a very small potential drift. These qualities make the potassium sensor promising for clinical use.

Acknowledgment

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DETERMINATION OF Mo(VI) TRACES BY ADSORPTIVE STRIPPING VOLTAMMETRY IN MUSHROOMS AND MINERAL WATERS

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Molybdenum has important role in enzymatic redox reaction. In biological systems, molybdenum is an essential constituent of enzymes, which catalyze redox reactions, e.g. oxidation of aldehydes, xanthine, and other purines, and reduction of nitrates and molecular nitrogen [1]. Molybdenum is necessary for good health, though in extremely small amounts. Molybdenum is found in all tissues of the human body, but tends to be the most concentrated in the liver, kidneys, skin and bones.

Many electroanalytical procedures have been proposed for the determination of trace amounts of molybdenum. In particular, adsorptive stripping voltammetric (AdSV) procedures have been developed for the determination of trace molybdenum [2,3].

In this work differential pulse adsorptive stripping voltammetry (DP AdSV) is applied for the molybdenum determination in mushrooms and mineral waters in the presence of chloranilic acid as a ligand with short preconcentration time. The calibration graph for presented method is linear from 2 nM (192 ngL^{-1}) to 200 nM (19 μgL^{-1}) for an accumulation time of 15 s. Acceptable recovery (93–105%) shows that the method can be used for the determination of Mo in mushrooms and mineral waters.

Acknowledgments

This work was supported by The National Centre for Research and Development (NCBiR) within a framework of LIDER program (No. LIDER/31/7/L-2/10/NCBiR/2011).

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DETERMINATION OF Mn(II) USING ANODIC STRIPPING VOLTAMMETRY IN MINERAL WATERS

Robert Piech[1], Beata Paczosa-Bator[1], Marek Szlósarczyk[2],
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Manganese is an essential micronutrient for all organisms [1], but at high concentrations can be toxic, contributing for example to the early development of Parkinson's disease symptoms in susceptible people [2]. Manganese is actually an extremely important element that the body uses for a variety of things. Manganese supports the immune system, regulates blood sugar levels, and is involved in the production of energy and cell reproduction. This important element is also important for bone growth. Additionally, manganese works with vitamin K to support blood clotting. Working with the B-complex vitamins, manganese helps to control the effects of stress while contributing to ones sense of well being.

Conventional anodic stripping voltammetry (ASV) of manganese suffers from the difficulties associated with the relatively low solubility of manganese in mercury, large hydrogen evolution background current and the formation of intermetallic compounds at the mercury electrode [3]. Consequently, there is no sufficient sensitivity achieved.

Application a new type of working electrode - cyclic renewable mercury film silver based electrode (Hg(Ag)FE) – for manganese(II) traces detection via differential pulse anodic stripping voltammetry *(DP ASV)* is reported. The effects of various factors such as: preconcentration potential and time, pulse height, step potential, surface areas of the working electrode are optimized. The calibration graph is linear from 10 nM (0.55 μgL^{-1}) to over 260 nM (14.3 μgL^{-1}) for an accumulation time of 15 s, with correlation coefficient of 0.9995. The detection limit for an accumulation time of 120 s is as low as 0.3 nM (16 ngL^{-1}). The proposed method was successfully applied and validated by studying the certified reference material TMRAIN–95.

Acknowledgments

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THE CORRELATION BEETWEN ELECTROLYTES IN HUMAN ORGANISM STUDIED BY POTENTIOMETRIC AND SPECTROFOTOMETRIC METHODS

Beata Paczosa-Bator[1], Robert Piech[1], Bogusław Baś[1], Włodzimierz Opoka[2]

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The monovalent and divalent bioelements like sodium, potassium, magnesium or calcium play an important role in a proper work of whole chain of intracellular metabolism [1-2].

The aim of this work was determination of current contents of main bioelements in blood of randomly chosen age population i.e. 9th to 75th year of life and their statistic interpretation in relation to common interrelation.

A content of elements was determined using the method of spectofotometric and potentiometric. The values of obtained concentration of the determined bioelements have been drowning up according to the applied division into two groups (male and female). The obtained results were subjected to statistic analysis.

Acknowledgment

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CHEMOMETRIC EVALUATION OF TRACE ELEMENTS CONTENT IN SELECTED RAW PLANT MATERIALS

[1]Marek Szlósarczyk, [1]Włodzimierz Opoka, [2]Robert Piech, [1]Jan Krzek

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In this work methods for the determination of zinc, copper, selenium, cadmium and lead by stripping voltammetry was developed and validated. The developed method was validated by procedure, including the analysis of certified materials (IC-INCT-MPH-2, INCT-TL-1, CTA-VTL-2, BCR-185). The application of this method was confirmed by the analysis of plant raw materials.

Evaluation was performed for 64 plant materials derived from 61 species and 24 families of plants tested for the analyzed elements in the various morphological parts of plants and the degree of accumulation of a given element in different plant species. The tested materials were divided into 5 groups of materials were divided into five groups including morphotic part of which came from the raw plant: roots, rhizomes, leaves, seeds, fruits, flowers and herbs. To determine the correlation between the elements studied, Pearson correlation analysis, principal component analysis (PCA) and cluster analysis were used.

Based on the results of the tests specified range of the data content of elements in the raw materials of plant, which for zinc was 9.5 - 59 $mgkg^{-1}$, copper 0.7 - 13 $mgkg^{-1}$, selenium 11.6 - 489 μgkg^{-1}, cadmium 0.1 - 0.86 $mgkg^{-1}$ and lead 0.05 - 2.41 $mgkg^{-1}$. These ranges are defined with the exception of samples with extreme selenium contents: coltsfoot leaf (1282 μgkg^{-1}) and seeds of amaranth (1031 μgkg^{-1}) copper contents: Oman root (17.04 $mgkg^{-1}$); contents of cadmium: cranberry fruit (2.34 $mgkg^{-1}$) and the wormwood herb (1.62 $mgkg^{-1}$), and fruit and leaf of cranberry containing 3.73 and 3.87 $mgkg^{-1}$ of lead, respectively. In each tested group positive correlations of raw materials for a couple Zn/Cu, which was significantly correlated in the group of herbs. In addition, a group of herbs, there was a statistically significant positive correlation between concentrations of cadmium and selenium. Strongly positively correlated pair of elements (Cd/Pb) were observed in the group of herbs ($r = 0.825$, $P < 0.05$) and seeds and fruits ($r = 0.826$, $P < 0.05$). However, negative correlation ($r = -0.690$, $P < 0.05$) was shown between copper and cadmium content in the seeds and fruits.

STABILITY ASSESSMENT OF RISPERIDONE

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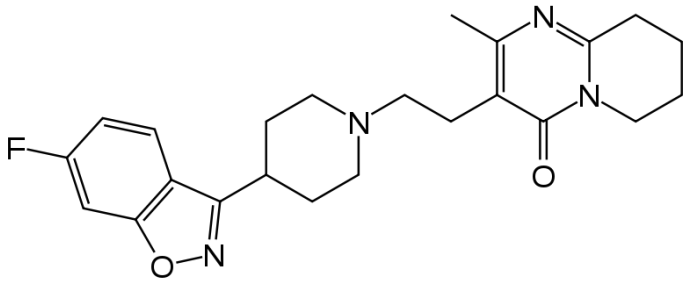
Risperidone (4 - [2 - [4 - (6-fluorobenzo [d] isoxazol-3-yl)-1-piperidyl] ethyl]-3-methyl-2,6-diazabicyclo [4.4.0] deca-1 ,3-diene-5-one) is an antipsychotic agent, a derivative of benzoxazole. It is a selective monoaminergic antagonist. It has high affinity for serotonin receptors 5-HT2 and dopaminergic D2 receptors. Risperidone has also interaction with α1-adrenergic receptors and, to a lesser extent, H1 histaminergic receptors and α2-adrenergic receptors. No affinity with cholinergic receptors. Is observed risperidone is used to treat schizophrenia, acute and chronic schizophrenic psychoses and other psychotic illnesses.



Stability of drug is verified by the content of pharmacologically active substance. In order to describe the stability of therapeutic substances the values of kinetic and thermodynamic parameters ($t_{0.1}$, $t_{0.5}$, activation energy) of processes leading to degradation of the drug substance are experimentally determined. The determination of these parameters allows to adjust the conditions of production, type of packaging and storage in order to protect the drug from degradation to inactive or toxic products.

For the purposes of quality control and analytical studies on the stability of the drug a validated chromatographic-densitometric method was developed for the determination of risperidone in the presence of degradation products in acidic and alkaline media at different temperatures. The chromatographic system consisted of F254 TLC plate and a mobile phase cyclohexane - acetone - diethylamine (20 : 2.5 : 2.5 v/v/v). Densitometric detection was performed at a wavelength of 280 nm. The developed analytical procedures could be an alternative to pharmacopoeial methods.

The results were used to determine the reaction rate constants k, $t_{0.1}$ and $t_{0.5}$ times, and activation energy Ea.

STABILITY STUDIES OF PAROXETINE

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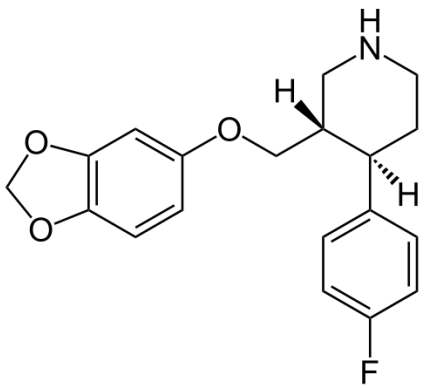
Paroxetine ((3*S*,4*R*)-3-[(2H-1,3-benzodioxol-5-yloxy)methyl]-4-(4-fluorophenyl) piperidine is a potent and selective serotonin reuptake inhibitor (SSRI) with antidepressant action. In terms of chemical structure it can not be classified into traditional tri-and tetracyclic medicines. It shows little affinity for muscarinic receptors, adrenergic α_1, α_2, β, dopamine D2, serotonin 5-HT1 and 5-HT2 and histamine H1. It is used to treat depression, obsessive-compulsive disorder, anxiety, social phobias, as well as post-traumatic stress.



Stability of drug is verified by the content of pharmacologically active substance. In order to describe the stability of therapeutic substances the values of kinetic and thermodynamic parameters ($t_{0.1}$, $t_{0.5}$, activation energy) of processes leading to degradation of the drug substance were experimentally determined. The determination of these parameters allows to adjust the conditions of production, type of packaging and storage in order to protect the drug from degradation to inactive or toxic products.

For the purposes of quality control and analytical studies on the stability of the drug a validated chromatographic-densitometric method was developed for the determination of paroxetine in the presence of degradation products in acidic and alkaline media at different temperatures. The chromatographic system consisted of F254 TLC plate and a mobile phase ethyl acetate - methanol – water – acetic acid (16 : 4 : 3 : 0,4 v/v/v/v). Densitometric detection was performed at a wavelength of 297 nm. The developed analytical procedures could be an alternative to pharmacopoeial methods.

The results were used to determine the reaction rate constants k, $t_{0.1}$ and $t_{0.5}$ times, and activation energy Ea.

INVESTIGATION OF INFLUENCE OF THE CHOSEN EXCIPIENTS ON THE PHYSICOCHEMICAL PROPERTIES OF FLUCONAZOLE WITH THE DSC METHOD

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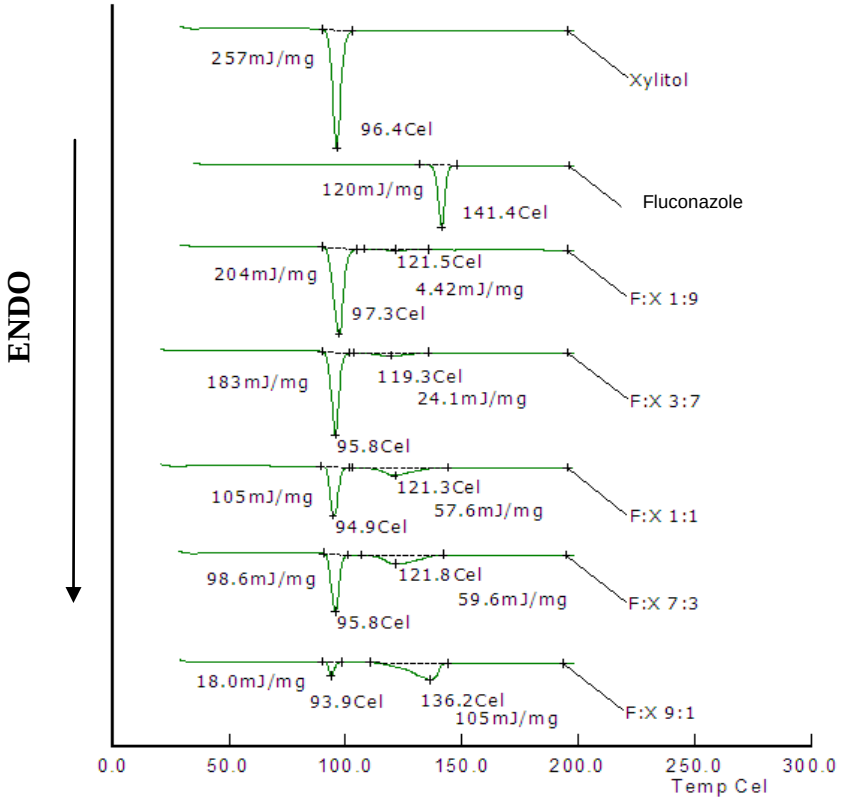
The aim of the present work was to examined the influence of chosen excipients on the physicochemical properties of the fluconazole with differential scanning calorimetry DSC. For this purpose the sets of physical mixtures obtained by simple mixing, kneading in mortar and coprecipitating was done. There were used microcrystalline cellulose (Vivapur 112 and 12), powdered cellulose (Vitacel M80), Maltodekstrin N, corn starch, agglomerated α-lactose, β-cyclodekstrin, chitosan (Daichitosan VL) and xylitol in the mass ratio 1:9 , 3:7, 1:1, 7:3, 9:1.

Our study results that there were no interactions between components of the mixtures with one exception. DSC curves of xylitol and fluconazole mixture (see figure below), no matter how they were prepared, shows evidently that the peak of fluconazole disappeared (141.4^{o}C) and a new peak (121.3-121.8^{o}C) coming from a new chemical structure can be find.



DETERMINADO DE N-BENZYLOPIPERAZINO EN BIOLOGIA PROVAĴO PER TEKNIKO GC/MS KUN EKSTRAKTO LAŬ TIPO LLE SEN MODIFADO DE ANALIZITAJ SUBSTANCOJ

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N-benzylopiperazino (BZP) estas modela kemia kombinaĵo apartenanta al. grupo de kvazaŭo narkotaĵstimulitoj, ordinare nomigitaj „party pills" aŭ „legal highs". Tiu ĉi kombinaĵo stimulas la centran nervan sistemon de la homo. Lia efiko estas komparebla al efiko de amfetamino, sed oni pritaksas ĝin 10-oble malpli forta.

La celo de esploroj estis prilaboro de proceduro por preparando de provaĵoj de plasmo por determini koncentritecon de BZP kun apliko de gasa kromatografio kunligita kun masa spektrometrio (GC-MS). Plej parte priskribitaj en referencaĵoj metodoj laŭ kiuj oni preparas biologiajn provaĵojn bezonas pli fruan kemian ŝanĝon de determinantaj ecoj de la provaĵoj [1-3], kio kaŭzas plilongigon de tempo por fari analizadon, oni bezonas pliajn kemiajn kombinaĵojn kaj krom tio povas oni povas perdigi parton de analizita eco de provaĵo.

La ĉefa celo kaj inspiro de la aŭtoroj de tiu ĉi laboraĵo estis prilaboro de simpla, rapida kaj malmultekosta metodo por prepari plasmajn provaĵojn por determini BZP uzante teknikon GC-MS.

Inter la multaj kontrolitaj kemiaj kombinaĵoj la plej bonajn rezultojn oni ricevcis aplikante esteron $CH_3COOC_2H_5$ por ekstrakti determinantan kemian kombinaĵon en alkala solvaĵo kun pH=12. Prilaborita metodo karakterizas bona reakirvaloro, kiu egalas al ĉirkaŭ 70% kaj ripeteco en la tago kaj dum kelkaj tagoj malpli 5% (RSD%).

Limskalo de la metodo egalas al 100-1000 ng/ml BZP kun samtempa valoro de koeficiento r2 pli ol 0.999.

Determinado de provaĵoj oni faris aplikante kromatografian aparaton de firmao Agilent kun speciala temperatura programo, gasa torento (split) 2:1 kaj volumo de provaĵo 1 µl. Oni analizis elektitajn jonojn (SIM). La tuta tempo de determino daŭris 10,67 minutojn.

La prilaborita metodo por determini BZP en biologia materialo estas senpera, ne postulas pli fruajn preparlaborojn por uzi teknikon GC-MS povas esti utila kaj alternativa kompare kun aliaj metodoj priskribitaj en referencaĵoj por apliki en toksikologiaj analizioj.

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POTENTIAL ANTIDEPRESSANT AND ANXIOLYTIC ACTIVITY OF NEW SEROTONIN RECEPTOR LIGANDS IN THE GROUP OF 7-ARYLPIPERAZINYLBUTYL DERIVATIVES OF 8 AMINO-PURINO-2,6-DIONE

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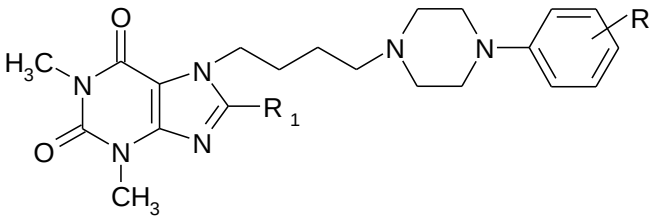
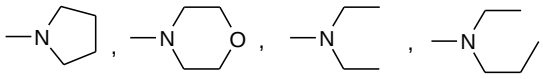
To continue our research with serotonin receptor ligands and extend the study on 5-HT_6 receptors we designed and synthesized series of the new analogues by replacement the alkoxy group with aliphatic and cyclic amine system (with hydrophobic and electrodonoric properties) in position 8 of the purine-2,6-dione core.

Additionally the orto-meta or meta-para dichloro substituents were introduced into the phenyl ring. According to the structure activity relationship observations these compounds containing tetramethylene spacer between the purine-2,6-dione skeleton and the basic nitrogen atom as the most preferable.



R = H, 2-OCH_3, 3-Cl, 2,3-diCl, 3,4-diCl

R_1 = 

The new analogues with high affinities for 5-HT_{1A}, 5-HT_{2A}, 5-HT_6 and 5-HT_7 receptors were pharmacologically evaluated in mouse models of depression and anxiety, i.e. the forced swim and the four-plate tests, respectively.

REHABILITADO KAJ ĜIA ROLO EN NUNTEMPA MEDICINO

Katarina FARAGÓ, Gábor GALIOTTI, Hedvig Prenker-BAKONYI,

Tibor HORVÁTH, Ernő LUKSZICS

Resumo: la aŭtoroj aplikante masaĝterapion Yumeiho® dum pli ol 15 jaroj - detale prezentas la laboron por la prevento, la terapion je diversaj movorganaj malsantipoj kaj kiel rehabilitadan kompleksan terapion kun gimnastiko. La medicin-tereno estas diversaj opinioj, la ĉefa punkto de iliaj laboroj: serĉu la originon/bazon de la malsano, trovu la terapion, kaj ĝuste apliku, ne deziru ĉesigi nur la simptomojn.

ROLO DE GRAVEDECO KUNLIGITE LA TIROGENAJ MALSANTIPOJ

Katarina FARAGÓ, Hedvig Prenker-BAKONYI

Resumo: la bazo de tiu prelego estis prezentita dum UK, en Danlando,(2010) Laŭ la plej freŝaj sciencaj rezultoj pripensante la enhavon de tiu prelego estas novaj punktoj aldonataj, ekz: serĉu la kialon ankaŭ ĉe la viroj, ekzemple malsanon de tirogenaj malsanoj.

RILATOJ INTER GINEKOLOGIAJ KAJ UROLOGIAJ MALSANTIPOJ – ĈEFE PRI INKONITNENCO

Katarina FARAGÓ

Resumo: Pri la malsantipo: Inkontinento multaj personoj nur sekrete rakontas dum la masaĝsesio Yumeiho®

Bedaŭrinde tiu problemo ĉeestas en grandkvalito de la masaĝitaj pacientoj, kun kiuj priparolinte la kaŭzojn, la simptomojn kaj la aplikatan terapioajn movojn – la rezulto estas akceptebla, kaj devas kune daŭrigi la komencitan kompleksan terapion, nome: masaĝon Yumeiho® Kaj la specialan gimnastikon.

RILATOJ KAJ REZULTOJ INTER Yumeiho® TERAPIO KAJ MALSANTIPO „ MSA „(Multi-szisztémás-Atropia)

Hedvig PRENKER-BAKONYI

Resumo: tiu malsantipo ne estas facile eltrovebla, ĉar la specialaj simptomoj ofte kaŝe restas, la nomon de tiu malsano ricevis laŭ la origo: en la cerbo mem la nerva sistemo „malboniĝas" disfunkcias. Dum la aplikata masaĝsesio Yumeiho® Je la komenco estis multaj problemoj, nun po semajno dufoje ricevas terapion nur parte !la pacientino / ŝi estas 76 jara / la diagnozado eblas nur laŭ la klinikaj simptomoj.

MALSANTIPOJ JE CERVIKALAJ VERTEBROJ – PREZENTADO DE DIVERSAJ MASAĜELEMENTOJ, ĜUSTIGAD/TEKNIKAJ ELEMENTOJ DE Yumeiho®

PLIBONIGI LA SANSTATON ANKAŬ JE INFANAĜO

Gábor GALIOTTI, Tibor HORVÁTH, Ernő LUKSZICS

Resumo: unu el la plej grava parto de la homa korpo estas mem la kola vertebraro, se la fakulo ne rekonas la malsantipon, ne bone elektas la terapion povus fari grandan doloron, eble okazus novajn simptomojn ekz.murmuron, kapturmiĝon, protruzion,hernion ktp.La plej grava situacio: ĉe la

infanaĝo, kiam la ostoj ankorau ne estas fiksitaj.devas esti plej atentemaj mem la masaĝistoj Yumeihoistoj.

Yumeiho® MASAĜO KIEL TERAPIO JE MALGRANDIĜO DE „DEPRESIO” PREVENTO KAJ REHABILITADO

Tibor HORVÁTH, Hedvig Prenker-BAKONYI, Gábor GALIOTTI, József ERDÉLYI

Resumo: dum pli 15 jara laboro per Yumeiho® masaĝterapio en belega kuracloko HÉVÍZ estas prezentata diversaj malsantipoj inter ili la depresio – kiu ege malhelpas la rezulton de la masaĝterapio Yumeiho®, ĉefe se la paciento tuj ne havas sendoloran sanstaton.

ROLO DE LA PATOLOGIO EN MEDICINO KOMENCE DE LA 21-A JARCENTO

-2-a parto – (1-a parto estis prezentita dum 17-a IMEK)

A PATHOLOGIA SZEREPE A MEDICINÁBAN A XXI.SZÁZAD ELEJÉN

István TÖRÖK

u. HÓDMEZŐVÁSÁRHELY, HUNGARIO

Resumo

La nombro de la patologiaj sekcadoj malaltiĝas mondskale, sed ilia graveco el pluraj vidpunktoj ankaŭ nuntempe estas grava.

En la histologia kaj citologia diagnostiko okazis gravaj ŝanĝoj, kiuj kompletiĝis en la molekula patologio.

La procezo ekis en la 1960-aj jaroj per la disvastiĝo de elektromikroskopo kaj klasika citonenetiko, en la 1970-aj jaroj per imunhistokemio kaj en la 1980-aj jaroj daŭris per la hibridaj teknikoj de dezoksiriba nukla acido „ DNA

Nuntempe montras la pluajn staciojn la polimeraj ĉenreakcioj, la „ fluorescens in situ hibridizacio”(FISH) kaj plej nove la Dezokribonukla-Acido-Ĉipoj, tiuj, ĉiuj nombrigas niajn konojn pri la estiĝo, progreso de tumoroj, pri la reguligo de ĉelcikloj, pri la programita ĉelmorto.

Sendube atendeblas, ke dankeble al molekulnivela analizado de prognostikaj faktoroj la procezo de tumoraj malsanoj iĝas pli facile ekkoneblaj. La elmontro de iuj onkoproteinoj povos multe avancigi ankaŭ la celitajn kuracadojn, inter alie pro la influo de angiogenezo.

CALRETININ-CONTAINING INTERNEURONS IN DORSAL HIPPOCAMPAL FORMATION IN ANIMAL MODEL OF DEPRESSIVE DISORDERS

Barbara Nowak, Alicja Braniewska, Monika Zadrożna

Department of Farmacobiology, Medical College, Jagiellonian University, Cracow, Poland.

Abstract

Calretinin-containing (CR+) neurons in the dorsal part of hippocampal formation (HF), including the subiculum, Cornu Ammonis (CA), and dentate gyrus (DG) were visualized with immunocytochemistry. General distribution of CR+ cells was similar in each studying group. Olfactory bulbectomy caused significant increase in CR+ density in stratum oriens of CA1 and stratum moleculare of suprapyramidal blade of DG (over threefold in both cases), and tendency to increase in most other regions of HF. CR+ cells were generally resistant to administration of amitriptyline as a antidepressant after bulbectomy, although the tendency of increase in cell density can be observed as a result of the sole amitriptyline treatment. Our findings indicate that in spatial related manner neurons that contain distinct calcium-binding protein, calretinin are differentially in response to bulbectomy model of depression. This could topographically involve inputs and outputs of the hippocampus as the location of the growing cell density overlaps with entorhinal-hippocampal projections, temporo-ammonic tract and perforant pathway.

Key words: calretinin, hippocampus, interneuron;

Gamma-aminobutyric acid (GABAergic) inhibition has a prominent role in the brain control of stress, the most important vulnerability factor in mood disorders. Reorganization of hippocampal GABA interneuronal microcircuits are considered to play a substantial or even causal role in major depressive disorders (Luscher et all., 2011**),** in schizophrenia (Zhang and Reynolds, 2002). in epileptogenesis (Houser, 1999; Cossart et al., 2001; Magloczky and Freund, 2005) and contributes to the development of autism (Lawrence et al., 2010). In the majority cases non-principal neurons seem to be resistant or are present in large numbers in the epileptic human hippocampus (Babb et al., 1989; Sloviter et al., 1991) although in contradiction the selective deficit of some interneuron populations has also been reported (de Lanerolle et al., 1989; Magloczky et al., 2000). Distinct subpopulation of GABAergic inhibiting cells containing calcium-binding protein (CR) was proved to be vulnerable to

ischaemic, and epileptic injury both in animal models (Magloczky and Freund, 1993; Andre et al., 2001; van Vliet et al., 2004; Tang et al., 2006) and in humans (Magloczky et al., 2000; Suckling et al., 2000). In the present study, we aimed to shed light on the possible roles of hippocampal CR+ neurons in bulbectomy animal model of major depressive disorders. This part of investigation refers to dorsal part of hippocampal formation.

Materials and methods. The hippocampi were excised from four groups of rat: control (C), bulbectomized (B), and after four-week amitriptyline treatment in follow of bulbectomy (BA), and as the sole factor as well (A) rat (n = 6 for each group). After removal, the hippocampi were immediately immersed into a fixative containing 4% paraformaldehyde in 0.1M phosphate buffer (pH 7.4) and proceeded to paraffin. Nine micrometre slices were processed for immunostaining according to standard LAB-SA method (LAB-SA Detection System, ZYMED, USA). Sections were dewaxed and rehydrated with standard procedures. To retrieve antigen, slides were heated from 92 to 96ºC in a 10 mM citrate buffer (pH = 6.0) for 20 min. Next, they were quenched sequentially in 1% H_2O_2 in methanol for 30 min, blocked with normal serum (ZYMED Labs, USA) and incubated in a moist chamber at 4ºC overnight with primary antibody (polyclonal anti-calretinin, Millipore, 1:200). A several washes of sections in PBS were followed by incubation with the appropriate biotinylated secondary antibodies (ZYMED Labs, USA) for 10 min at room temperature, then followed by the streptavidin-peroxidase complex (ZYMED Labs, USA) for 10 min at room temperature. The binding of primary antibody was visualized using diaminobenzidine (Invitrogen Ltd., UK) for 8 min. After washing with distilled water, some sections were counterstained with a Nissl substance, dehydrated in ethanol and xylene and mounted in the DPX medium (Fluka). Immunostaining controls: no labeling was detected when primary antibodies were omitted. All samples (n = 24) were examined at the light microscopic level. To obtain data on changes of the number of calretinin-positive cells, three to four representative sections of the hippocampi were drawn by camera lucida. The area of each region was measured by the CellD software. The CR positive cells were counted and the cell number was determined per unit area (mm^2). Subiculum (distinguishing strata oriens, pyramidale and moleculare), CA1 (strata oriens, pyramidale, radiatum and lacunosum-moleculare), CA3 (strata oriens, pyramidale and radiatum+lacunosum-moleculare), CA4, dentate gyrus – suprapyramidal blade (strata granulosum, moleculare and subrgranular zone), and the same three layers for dentate gyrus – infrapyramidal blade, and hilus were measured separately. Data were evaluated by the Statistica 10.0 software. Kruskal Walis one-way analysis of variance and Dunn's multiple comparison *post-hoc* test were applied.

Results and Discussion. CR immunoreactivity was present in non-principal cells in all regions of dorsal HF and the general distribution of CR+ cells was similar in each included group. In most subregions of HF bulbectomized rats, the preservation or even an increase of the number of CR+ cells in comparison to control was observed (Tables.1-2). The largest immunoreactive cell density was found in the strata pyramidale (for CA3: 9.86 cell/mm^2 in control HF and 11.20 cell/mm^2 in bullbectomized HF) and radiatum of CA, in the hilus (4.58 cell/mm^2 and 7.74 cell/mm^2 respectively), and in the subgranular zone of the suprapyramidal

blade of the DG (4.76 cell/mm^2 and 7.74 cell/mm^2 respectively). Although the lesser proportionally number of CR+ cells was visible in stratum oriens of CA1: 3.07 cell/mm^2 and stratum moleculare of DG: 5.05 cell/mm^2 of bulbectomized rat, but as in these areas hardly any CR+ cells can be found in control animals, we stated a statistically significant increase of density here ($p<0.05$, Fig.1). Amitriptyline treatment in follow of bulbectomy and as a sole factor evoked such a changes, though generally much weak (Tables.1-2). Positive correlations in density or CR+ cells between consecutive regions along the multisynaptic way of entorhinal cortex – hippocampal formation projection were identified (Fig.2); i.e. DG:CA4, CA4:CA3, CA3:CA1, CA1:subiculum, which confirms the consistency of observed changes

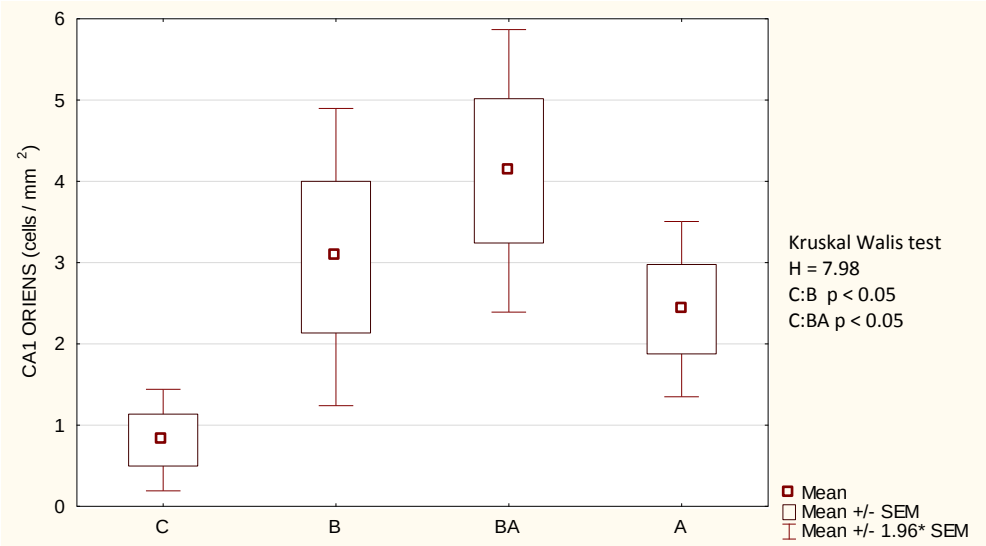


Figure 1. The stratum oriens of CA1 region of dorsal hippocampus; the density of calretinin-containing cells in control samples (C), bulbectomized (B), and in amitriptyline treated in follow of bulbectomy (BA) and as the sole factor (A) samples.

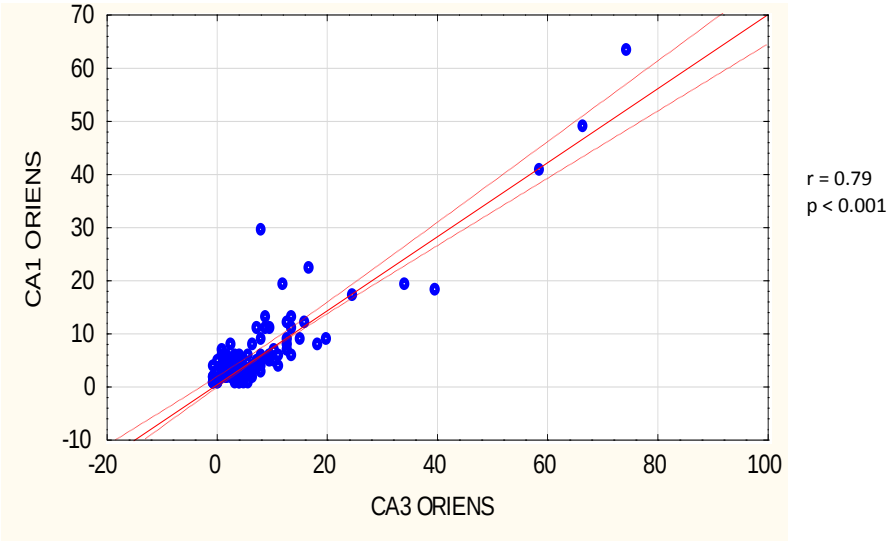


Figure 2. Positive correlation in density or CR+ cells between consecutive CA1: CA3 regions (stratum oriens) in run of multisynaptic way of entorhinal cortex – hippocampal formation projection.

Table 1. Data of the density of calretinin-positive cells in the Ammon's horn of dorsal rat hippocampus (cells/ mm^2) for subiculum and CA1 – CA4 subareas; OR, stratum oriens; PYR, stratum pyramidale; MOL, stratum moleculare; RAD, stratum radiatum; LM, stratum lacunosum-moleculare), R+LM, strata radiatum+lacunosum-moleculare pooled together; SPYR, area located over (supra-) dense group of cells; IPYR, - respective area located below the cell (infra-); for control hippocampal formation (C), bulbectomized (B), and amitriptyline treated in follow of bulbectomy one (BA), and amitriptyline treated as the sole factor (A).

	SUBICULUM			**CA1**				**CA3**			**CA4**		
	OR	PYR	MOL	OR	PYR	RAD	LM	OR	PYR	R+LM	SPYR	PYR	IPYR
C n=6													
_	**3.28**	**3.21**	**2.79**	**0.82**	**6.72**	**2.77**	**1.43**	**1.46**	**9.83**	**4.18**	**3.33**	**5.91**	**5.80**
X	0.00–	0.99–	1.18–	0.00–	2.31–	0.99–	0.00–	0.00–	3.36–	3.25–	0.00–	0.00–	0.00–
range	8.87	5.92	4.51	2.01	10.89	3.99	3.63	5.42-	15.17	6,53	7.37	11.73	17.12
SEM	1.28	0.74	0.54	0.31	1.28	0.42	0.54	0.82	1.90	0.31	1.51	1.86	2.7
B n=6													
_	**2.35**	**4.46**	**2.08**	**3.07**	**8.11**	**3.11**	**1.01**	**2.09**	**11.20**	**5.79**	**2.17**	**7.12**	**7.23**
X	0.00–	1.90–	0.00–	0.75–	5.12–	1.21–	0.00–	0.00–	8.39–	3.69–	0.00–	2.16–	0.00–
range	5.06	6.52	4.68	6.36	10.44	5.22	1.91	4.56	19.96	8.65	5.65	9.65	16.39
SEM	0.69	0.69	0.83	0.93	0.93	0.55	0.35	0.72	1.76	0.87	0.85	1.13	2.24
BA n=6													
_	**1.94**	**3.33**	**3.63**	**4.13**	**9.05**	**2.58**	**0.95**	**1.21**	**10.68**	**5.68**	**2.67**	**8.29**	**4.35**
X	0.00–	0.00–	0.00–	0.00–	3.18–	0.77–	0.00–	0.00–	6.39–	2.74–	0.00–	0.00–	0.00–
range	7.04	7.11	9.38	7.37	12.52	5.44	2.48	2.74	14.01	8.57	5.33	19.33	10.52
SEM	0.92	1.17	1.24	0.88	1.4	0.58	0.32	0.32	1.21	0.89	0.81	2.25	1.45
A n=6													
_	**1.43**	**3.20**	**2.75**	**2.43**	**5.97**	**2.38**	**1.99**	**1.94**	**11.99**	**4.93**	**1.32**	**4.90**	**5.81**
X	0.00–	0.00–	0.00–	0.00–	2.41–	0.60–	0.00–	0.00–	6.97–	2.18–	0.00–	0.00–	0.00–
range	5.41	8.17	5.41	5.05	11.77	4.15	3.97	4.39	18.42	7.52	4.05	10.47	14.47
SEM	0.56	1.00	0.49	0.55	0.96	0.42	0.50	0.55	1.28	0.60	0.54	1.15	1.51

Table 2. Data of the density of calretinin-positive cells in the dentate gyrus of dorsal rat hippocampus (cells/ mm^2) for hilus, suprapyramidal and infrapyramidal blades; MOL, stratum moleculare; GRAN, stratum granulosum, SUBGR, subrgranular zone; groups C, B, BA, and A as in Table.1.

	HILUS	SUPRAPYRAMIDAL BLADE			INFRAPYRAMIDAL BLADE		
		MOL	GRAN	SUBGR	MOL	GRAN	SUBGR
C n=6							
$\bar{X}$	**4.58**	**1.51**	**0.69**	**4.76**	**0.34**	**0.6**	**2.41**
range	0.00	0.00	0.00	1.64	0.00	0.00	0.00
	14.19	5.23	2.84	10.47	2.06	3.63	10.86
SEM	2.90	0.97	0.48	1.35	0.34	0.6	1.78
B n=6							
$\bar{X}$	**11.38**	5.05	**1.33**	**7.74**	**2.01**	**0.00**	**3.16**
range	0.00	2.28	0.00	0.00	0.00	–	0.00
	19.27	11.26	3.07	16.12	4.26		10.44
SEM	5.20	1.39	0.60	2.44	0.72		1.69
BA n=6							
$\bar{X}$	6.45	2.54	**1.31**	**8.34**	**3.81**	**0.00**	**2.59**
range	0.00	0.00	0.00	0.00	0.00	-	0.00
	14.36	9.18	3.02	19.09	8.92		8.82
SEM	3.89	1,32	0.39	2.16	1.40		1.43
A n=6							
$\bar{X}$	**7.50**	**0.90**	**1.11**	**8.19**	**1.05**	**0.00**	**3.70**
range	0.00	0.00	0.00	1.29	0.00	-	0.00
	23.67	4.96	5.52	23.93	2.54		9.99
SEM	3.17	0.55	0.60	2.31	0.41		1.16

Calretinin-containing neurons are high selective inhibitory cells in the rat hippocampal formation targeting dendritic inhibitory cells (most of all calbindin containing neurons) and other calretinin-containing interneurons forming dendro-dendritic massive contacts with each other. The cells are responsible for the synchronization of dendritic inhibitory cells, which has a prominent role for an efficient control of principal cells. Dendritic inhibitory neurons can prevent the generation of dendritic calcium spikes and restrict synaptic plasticity. Thus calretinin-containing neurons involve as a "disinhibitory" neurons (Gulyas et al., 1996, Toth et al., 2010, Urban et al., 2002). The question emerges which neuromodulation factor are likely to be involved making the calretinin-immunoreactive cells resistant or more numerous in follow of bulbectomy in a spatial dependent manner? Notes the consequence of observed increasing in cell density, and although it was not confirmed by the statistics, which probably arises from a small number of cases, the cells or nothing less than tended to increase in density in almost all subregions. It is noteworthy that the location of the significantly growing

cell density overlaps with two substantial entorhinal-hippocampal projections, namely classic perforant pathway crossing the hippocampal fissure to continue into stratum molecular of dentate gurus and the second temporo-ammonic tract. Axons in the temporo-ammonic tract travel trough stratum oriens of CA, and eventually traverse into the most superficial layers. The number of entorhinal fibers that projects the temporo-ammonic way increase precisely in dorsal level of hippocampal formation. This should be examined against the background of the fate of other subpopulations of interneurons and principal cells, also those projecting from entorhinal cortex.

In conlusion we state that olfactory bulbectomy caused over threehold increase in calretin containing cells density in stratum oriens of CA1 and stratum moleculare of suprapyramidal blade of DG. This spatial related manner reorganization overlaps with two entorhinal-hippocampal projections, perforant pathway and temporo-ammonic tract and this could involve topographically involve inputs and outputs of the hippocampus as the location of the growing cell density overlaps with important entorhinal-hippocampal projections, temporo-ammonic tract and perforant pathway. Future studies should better explore the relationship between interneurons co-creating GABAergic system and should further clarify the potential mechanisms implicated in the reorganization of calretinin containining neurons in bulbectomy modeled depressive disorders.

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HYPODONTIA AS A PROOF OF EVOLUTION

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Hypodontia is the most common teeth developmental anomaly. It is essential to analyze occurrence of such disturbances, as this disorder can affect the balance of the stomatognathic system. This disorder can affect the balance of the stomatognathic system, so it is appropriate to analyze the occurrence of such disturbances. There are only few studies on this topic in Poland and in the world.

Objective: The aim of this study was to obtain data on the prevalence of deficiencies in the quantity of third molars by the analysis of orthopantomograms. For these research medical records from University Dental Clinic in Krakow was used. Over 23 000 x-ray pictures were analized. 207 of them met the criteria (age between 13 to 18). Women accounted for 61.35% (127 patients), and men 38.65 % (80 patients).

Results: Agenesis of 1 to 4 third molars was present in 23.67%. Lack of just one (any) third molars occurred in 27 patients (13.04%). Absence of two wisdom teeth was found in 16 patients (7.73%), lack of three third molars in 3 patients and another 3 had none (1,45%).

Conclusion: The result of this study correspond to the similar researches in the world. Reduced dimensions, delayed tooth formation and eruption are features that suggest the tendency to wisdom tooth agenesis.

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DEPRESSIVE DISORDERS AS A RISK FACTOR FOR PERIODONTAL DISEASES

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Both depressive disorders and periodontal diseases are a serious social problem. Severe periodontitis, which eventually leads to tooth loss affects 5 -15% of the population around the world. Periodontitis may also cause severe general diseases including cardiovascular diseases and respiratory system diseases.

Periodontal disease pathology, including etiology, pathogenesis, development risk factors were briefly presented. The aim of this study was to draw attention to affect of exposure to depressive disorders on the presence of periodontal disease. Theories explaining interdependence of depression and periodontitis were presented. These are biological and behavioral theories. Authors conclude that patients with mood disorders are significant group of patients treated by dentist. As a people with an increased risk of periodontitis they require special attention and a strong motivation to care of oral hygiene and general and periodontal dental treatment.

DENTAL CARE FOR CANCER PATIENTS AFTER RADIOTHERAPY

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Urbanisation, increasing life expectancy and a specific lifestyle (customs and habits) are leading to a steady rise in patients suffering from oncological diseases. The methods used to treat such patients (surgery, radiotherapy and chemotherapy) have negative side effects, such as disrupting the proper functioning of the immunological and hematopoietic system, which in turn has a negative impact on oral health.

The aim of the research carried out in this study was to gain documented knowledge of the clinical status and changes in the microflora of the oral cavity under the influence of radiotherapy administered to patients suffering from cancers affecting the organs of the head and neck, and on this basis prepare guidelines for local dental treatment.

Materials & Methods: A total of 82 patients with head and neck organs cancer, referred to primary or postoperative radiotherapy, were examined. Clinical condition of oral mucosa was evaluated, and microbiological examination of buccal smears and oral washings were carried out.

Results: The pain increased and inflammation of the oral mucosa (*oral mucositis*) occurred, together with erosions and ulcerations in the course of radiotherapy. Simultaneously, the amount of pathogenic bacterial flora increased, and the indigenous flora increased intensively. The number of patients in whom *Candida* fungi were isolated increased as well.

Conclusions: Radiotherapy causes adverse effects in the oral mucosa. The growth of bacterial and fungal flora is conducive to occurrence of mucosal inflammatory lesions.

Based on an analysis of the results of research carried out within the framework of the present study the author proposes a dental treatment algorithm supporting the radiotherapy treatment of patients with carcinoma in the region of the head or neck.

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MAGNESIUM FOR TREATMENT OF DEPRESSION

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Magnesium (Mg) is an essential trace element that influences the nervous system via its actions on the release and metabolism of neurotransmitters. Magnesium is a NMDA receptor antagonist. It blocks in voltage-dependent manner the NMDA-gated channel. Lowering extracellular magnesium concentration increases central hyperexcitability due to disinhibition of NMDA receptor channels, leading to enhanced neuronal excitability.
Both, experimental and epidemiological data suggest that changes in Mg homeostasis contribute to affective disorders. Numerous clinical studies demonstrated changes in Mg homeostasis in affective disorders, although some inconsistencies exist between the studies. The low serum Mg level in depressed patients, no alterations or increases in blood Mg have been also observed. A relation between low Mg concentration in cerebrospinal fluid and depressive disorders has also been suggested in subjects after suicidal attempts.

Mg appears to have therapeutic potential in human depression. The mood stabilizing properties of Mg have been demonstrated in patients with mania and in patients with rapid cycling bipolar disorders. Depressive symptoms were also connected with low serum magnesium in patients with long-lasting depression and in patients with unipolar depression.

Mg deficiency leads to reduction in offensive and increase in defensive behavior and increase in anxiety- and depression-like behavior, manifested with a decreased struggling in the forced swim test and increased preference for the dark compartment in the light-dark test. Moreover magnesium administration reduces immobility time in the forced swim test (FST) in rodents, which indicates possible antidepressant activity in humans. Additionally Mg enhanced the action of antidepressant drugs in mice. We observed the enhancement of antidepressant-like activity by joint administration of magnesium and imipramine, citalopram and tianeptine, but not with reboxetine in FST. The data suggested the involvement of serotonergic but not noradrenergic pathway in magnesium/antidepressants-induced potentiation of antidepressant-like activity in the FST. Thus, magnesium may be an antidepressant or adjunct agent for the treatment of depression.

METABOLOMICS AS A TOOL FOR DIAGNOSIS OF MENTAL AND NEURODEGENERATIVE DISORDERS

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The metabolome, being a group of small, endogenous, non-protein compounds present in the organism and involved in metabolic pathways, is the scope of metabolomics. Its main aim is simultaneous determination of these compounds which are the final products of cell metabolism. Contrary to its basic meaning, a metabolomic biomarker is defined as a group of substances and their interactions, because of the assumption that any pathology is reflected in the metabolism as a change of concentration, ratio, etc. of compounds within the metabolome. Metabolomic analysis consists of the same stages as other analytical methods, however, it is crucial to stop any metabolic changes immediately after sample collection. Furthermore, metabolomics uses a wide range of various analytical techniques to obtain as much data as possible. Lately, metabolomics investigates, still poorly explored, psychiatric and neurodegenerative disorders because evidence has come to light suggesting a link between phospholipid impairment and those diseases.

APPLICATION OF NON-IONIC SURFACTANT FOR EXTRACTION OF BASIC, ACIDIC AND NEUTRAL MEDICAMENTS FROM HUMAN PLASMA ANALYZED BY HPLC/DAD METHOD

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Surfactants are substances that at appropriate concentrations (above critical micelle concentration, cmc) create aggregates (micelles) which orientate their hydrocarbon tails towards the center to form non-polar core. Surfactants may be divided into three groups: 1. ionic, 2. non-ionic and 3. zwitterionic. Isolation of analytes into a hydrophobic core of a surfactant (especially a non-ionic or a zwitterionic surfactant) is known as the cloud-point

extraction (CPE) technique. In CPE, separation of two phases, i.e. the surfactant –rich phase with the isolated analytes and the aqueous supernatant phase concentrating the surfactant close to cmc, is caused mainly by influence of an appropriate temperature.

The aim of our examinations was to demonstrate the possibility of the non-ionic surfactant – Triton X-114 use for extraction of basic, acidic and neutral medicaments from a single human plasma sample, assayed by HPLC/DAD method. For investigations, nine model medicaments were selected: salicyclic acid, opipramol, alprazolam, lorazepam, carbamazepine, paracetamol, promazine, amitriptyline and clomipramine. They were isolated from plasma samples in two steps; first basic compounds from alkaline pH and then acidic/neutral compounds from a neutralized (by 0.5 NaOH) plasma sample. CPE conditions were optimized using spiked control plasma samples, taking into account such factors like: sample pH, concentration and volume of the surfactant, volume of acetonitrile (used for dissolution of micellar phase with the isolated medicaments). The rest conditions such as temperature and time of incubation of a sample with the surfactant, time and temperature of evaporation of micellar phase under stream of nitrogen were assumed constant, on the base of previous investigations [1]. In the optimized conditions main validation parameters (extraction recovery, intra- and inter day repeatability and limit of detection) were determined. Moreover, in order to verify the credibility of the developed CPE-HPLC/DAD method, screening analysis of two "clinical" serum samples were carried out. The obtained results and the determined validation parameters indicate that the proposed CPE method may be successfully used as an alternative for conventional preparation techniques of plasma/serum samples analyzed for medicaments at therapeutic or low toxic concentration levels. The CPE procedure is characterized by simplicity, quick, low costs and environmentally mild character.

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CAN METALS BE CONSIDERED AS MARKERS OF *PERIODONTITIS?*

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The goal of the study was to apply the available methodology to determination of selected metals in saliva and blood of patients with periodontitis and healthy controls with the use of two ICP techniques, and in the next step – statistical analysis of the obtained data.

Microwave mineralization (at the power of 1200 W) in closed containers was used for sample preparation. Good accuracy was received. Satisfactory analytical parameters of the applied methodology were obtained as well. High accuracy (e.g. relative error for Fe – 0.10%), low limits of detection (from 0.004 $\mu g \cdot L^{-1}$ for Cd and Co) and high precision (for example CV for Cu in blood – 0.02%) were achieved.

Significant increase of Cr, Cu, Mg and Mn concentrations in saliva of patients was observed ($p<0,05$), probably related to periodontal diseases. No correlation was found between salivary and blood concentrations of 10 metals ($p<0.05$) and differences between them were statistically significant (except for Cd). Sex and smoking had no effect on the levels of the examined elements in saliva and blood. There were weaker correlations among metals in biological fluids for patients than for healthy donors. Cluster analysis enabled to distinguish saliva samples of patients and healthy individuals correctly.

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ANALYSIS OF STEVIOSIDE IN MARKETED SWEETENER

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The aim of this study was to analyse diterpene glycoside stevioside in marketed sweetener in form of tablets. The determination was done using simple high performance thin-layer chromatographic method with accurate and precise densitometric detection. Authors have considered some hitherto published analytical procedures dealing with herb stevia [1-3] and make some improvements. Most of all, one-step, simple extraction was elaborated. New mobile phase was proposed which enabled good separation and advisable R_F value. Detection in UV range was done, without need of derivatization or coloring.

As a stationary phase serve HPTLC silica gel 60 F254 plates, and as mobile phase a mixture composed of: ethyl acetate - methanol - water (7:2:1, v/v/v). Mixture of methanol and water (4:1, v/v) served as a reference standard and sample solvent. Only 20,0 μg of preparation was required for single test. The development distance was 85 mm and the development time 50 min. The retardation factor R_F was about 0,63. Further analysis was enabled by using sample applicator Linomat 5 and densitometer Scanner 3 both manufactured by Camag. Identity of substance was confirmed by R_F value and UV spectra. Scan was performed at wavelenght 200 nm, where absorbance maximum occurred.

Reliable results was obtained. No interferences with concomitant substances were noticed. Each tablet contained 2,23 mg of stevioside. Such analysis was performed for the first time in marketed sweetener using HPTLC method. It needs further studies and complex validation, but even now could be recommended for routine examinations.

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EDIBLE MUSHROOMS AS A SOURCE OF INDOLE DERIVATIVES WITH ANTIDEPRESSANT POTENTIAL

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Thousands of years, fruiting bodies of higher fungi have been used as a source of food. Today may be derived not only from the natural state and commercial farms but also from *in vitro* cultures conducted under appropriate conditions. Edible mushrooms are increasingly studied due to the production of biologically active secondary metabolites. Biologically and therapeutically active metabolites of mushrooms are used in the treatment of such serious diseases as cardiovascular diseases, diabetes, arteriosclerosis and cancer. This study is about qualitative and quantitative analysis of indole compounds in methanolic extracts from unprocessed and thermal processed fruiting bodies of selected edible mushroom species belonging to the Basidiomycota phyllum. Methanol extracts from fruiting bodies after concentration in evaporator were purified by PTLC preparative chromatography, and then analyzed for indole compounds by HPLC method. By this analysis in all extracts both in mushrooms before and after thermal processed we have identified and quantified for the first time several indole compounds with antidepressant activity. On the basis of the analysis the following indole compounds were found: L-tryptophan, 5-OH-tryptophan, 5-CH_3-tryptophan, tryptamine, 5-CH_3-tryptamine, serotonin, indole, indoleacetic acid, indoleacetonitrile, melatonin, kynurenic acid and kynurenine sulphate. Tryptophan and 5-hydroxytryptophan (5-HTP) are precursors of serotonin. 5-HPT, which is a direct precursor of serotonin, when ingested, easily crosses the blood brain barrier into the central nervous system where it is efficiently converted to the serotonin and then presented antidepressive activity. The compounds determined in the all of species were L-tryptophan (0.01 to 17.71 mg/100 g DW).
The maximum amount of 5-hydroxytryptophan were found in the unprocessed *Lentinula edodes* (the shiitake) and *Macrolepiota procera* (the parasol mushroom). The processed fruiting bodies of *M. procera* were found to contain 10.11 mg/100 g DW. 5-CH_3-tryptophan were determined in the processed fruiting bodies of four species: *Boletus edulis* (the King bolete), *Cantharellus cibarius* (the Chantarelle), *Lactarius deliciosus* (the saffron milk cap) and *Pleurotus ostreatus* (the oyster mushroom), and in the highest amounts in unprocessed *Leccinum scabrum* (the birch bolete) (8.32 mg/100 g DW). Serotonin, in turn, were determined in the unprocessed fruiting bodies, with the highest amount in S*uillus luteus* (34.11 mg/100 g DW).

ENHAVO