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USSR Report

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USSR REPORT

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BIOMEDICAL AND BEHAVIORAL SCIENCES

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CHLORELLA CONTROL OF COTTON FUNGUS--New possibilities in the fight against wilt were revealed by scientists at the Institute of Microbiology of the Uzbek SSR Academy of Sciences. They have determined that a chlorella suspension can halt the spread of fungus disease in plant tissue. Experiments have shown that when the seeds of a cotton plant have been treated with micro-algae, the fungus shows up only in the roots. There is no further penetration of the plant--the chlorella strengthens the plant cells' defense mechanisms. ["Chlorella Against Wilt"] [Text] [Tashkent PRAVDA VOSTOKA in Russian 27 Jul 86 p 2] 13085/5915

CSO: 1840/1268

UDC 632.937.14:582.288.45(571.53)

ENTOMOPATHOGENS CEPHALOSPORIUM CDA FUNGI ON INSECT PESTS IN IRKUTSK OBLAST

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 19, No 6, Nov-Dec 85 (manuscript received 11 Apr 84) pp 474-477

[Article by B. N. Ogarkov and G. R. Ogarkova, Scientific Research Institute of Biology at Irkutsk State University imeni A. A. Zhdanov]

[Abstract] The title fungi are widely spread in subtropical regions of the USSR. Recently they were also noted in other climatic zones; in Irkutsk oblast their presence is not excessive. Most of the isolated strains were of the mixed cultures of Beauveria Vuill. and Paecilomyces Brown et Smith. The goals of this study were to isolate these parent strains which are capable of causing mycosis of the insect pests; Galleria mellonella L., resistant to many entomopathogenic microorganisms was used as the test object. Morphologic characteristics of Cephalosporium fungi were reported. References 9: 6 Russian, 3 Western.

7813/5915
CSO: 1840/062

UDC 581.143.2:581.557.2

INTRODUCTION OF NITROGEN-FIXING CYANOBACTERIUM TO TOBACCO PLANTS

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 5, Sep-Oct 85 (manuscript received 23 Jul 84) pp 645-651

[Article by L. V. Pivovarova, T. G. Korzhenevskaya, O. I. Baulina, R. G. Butenko and M. V. Gusev, Biology Faculty, Moscow State University imeni M. V. Lomonosov]

[Abstract] Microorganisms, to be used in symbiotic association with economically-important crops, as sources of natural nitrogen must meet certain requirements: be competitive with other microorganisms, have a broad spectrum of specific characteristics to prove the capabilities of the association, have highly effective nitrogen fixation, be stable and viable, and bond readily with soil or seeds. This article reports on attempts to create an

artificial association by introducing the nitrogen-fixing cyanobacterium Anabaena variabilis to tobacco plants. After failing to produce associations by application of these cyanobacteria directly to grown plants, the authors used the method of mixed callus cultivation with subsequent organogenesis. Cyanobacterium was applied to the callus by application on the surface and injection into the callus bud. The resulting plants contained cyanobacteria both on the surface and within the plant tissue. It is thought that the association must pass through the stage of callus culture together with the cyanobacterium to achieve the desired association. References 16: 9 Russian, 7 Western.

6508/5915
CSO: 1840/021

UDC 528.71

USE OF HARRINGTON DESIRABILITY FUNCTION IN ASSESSMENT OF CROP STATES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 4, Apr 86 (manuscript received 12 Nov 85) pp 1017-1019

[Article by K. Ya. Kondratyev, academician, and S. M. Somova, Institute of Lakes Administration, USSR Academy of Sciences, Leningrad]

[Abstract] One of the reasons for poor survival of winter crops is due to improper conditions during their wintering period. Early spring evaluation of their development potential during the growing period would be of great assistance to proper management of the soil. One of the predictive methods is based on reflection spectrometry of the leaves. The principal reason for these changes is the loss of chlorophyl. It was shown that the Harrington function could be used to predict quite accurately the future of various crops on a qualitative level. Figures 2; references 4 Russian.

7813/5915
CSO: 1840/451

BIOCHEMISTRY

UDC 535.36 + 57.08 + 576.8

KINETICS OF IMMUNOLOGICAL AGGLUTINATION REACTION AND RAPID DETERMINATION OF BACTERIA USING AUTOMATED LASER PHOTON-CORRELATION SPECTROMETER

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 5, Apr 86 (manuscript received 30 Dec 85) pp 1239-1244

[Article by I. G. Yersh, L. S. Muratov, S. Yu. Novozhilov, B. M. Shtokman and M. I. Shtokman, Institute of Automation and Electrometry, Siberian Department, USSR Academy of Sciences, Novosibirsk]

[Abstract] Previously, immunologic agglutination reaction was based on visual observations which required long reaction time. In the present paper the kinetics of agglutination was studied from the very first minutes of the reaction with the following findings: distribution of aggregates within 3 min $\leq t \leq$ 5 hrs; kinetics of this process expressed as a function of serum concentration; discovery of a "latent" stage in this reaction at 10 min $\leq t \leq$ 1 hr. This was achieved by using photon correlation spectroscopy of diffuse laser radiation which determined diffusion coefficients of particles in suspension. Agglutination reaction was observed at all levels of dilution (from 1:100 to 1:2000), beginning at t = 3 min. The kinetics of this reaction varied with serum concentration. This method made it possible to identify the bacteria in suspension within a few minutes of the experiment while retaining the immunologic specificity. Figures 4; references 11: 5 Russian (1 by Western authors), 6 Western.

7813/5915
CSO: 1840/453

UDC 577.15.025

DIFFERENT LOCATIONS OF ACTIVE SITES OF CYTOCHROMES P-450 AND P-448 IN RAT LIVER MICROSOME MEMBRANES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 5, Apr 86 (manuscript received 2 Dec 85) pp 1244-1248

[Article by M. V. Izotov, V. M. Shcherbakov, V. M. Devichenskiy, L. V. Lugovaya, S. A. Benediktova and A. N. Saprin, Scientific Research Institute of Biological Evaluation of Chemical Compounds, Moscow]

[Abstract] The monooxygenase system of liver microsomes is responsible for biotransformation of a wide assortment of xenobiotics and some endogenous substrates. Following the immunologic system, this enzymatic system is the most important protection mechanism of the organism. Relative distribution of the active centers of cytochrome P-450 and P-448 in the system water: microsome membrane phospholipid was investigated on male Fischer and Sprague-Dawley rats. It was shown that the active center of P-448 cytochrome was localized primarily in the lipid phase of the membrane, while the P-450 was manifested in the aqueous phase. This finding was supported by data obtained by the authors in earlier experiments. Figures 3; references 15: 3 Russian, 12 Western.

7813/5915
CSO: 1840/453

UDC 577.152.361*3:577.113.5

HUMAN Na^+,K^+-ATP-ASE GENES. NUCLEOTIDE SEQUENCE CODING FOR C-TERMINAL REGION OF α-SUBUNIT

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 5, Apr 86 (manuscript received 24 Feb 86) pp 1251-1254

[Article by Yu. A. Ovchinnikov, academician, G. S. Monastyrskaya, N. Ye. Broude, Yu. A. Ushkarev, G. M. Dolganov, A. M. Melkov, Yu. V. Smirnov, N. S. Akopyants, I. Ye. Dulubova, R. L. Allikmets, N. N. Modyanov and Ye. D. Sverdlov, corresponding member, USSR Academy of Sciences, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow]

[Abstract] Na^+,K^+-ATP-ase molecule is an oligomer consisting of two polypeptide chains. In the present publication, results are reported of the analysis of human Na^+,K^+-ATP-ase gene structure. Nucleotide sequence of this gene fragment and aminoacid sequence of C-terminal region is reported and compared to mRNA and protein sequence obtained from pig's kidneys. Partial structure of five identified introns and their localization sites are reported. There are adequate data now indicating two forms of catalytic subunits of Na^+,

K^+-ATP-ase (α and α^+) differing by molecular weight, N-terminal aminoacid sequence and a number of functional properties. Figures 1; references 15: 4 Russian, 11 Western.

7813/5915
CSO: 1840/453

UDC 615-012:[576.314:579.864.1]

COMPOSITION AND BIOLOGICAL PROPERTIES OF A PREPARATION FROM CELL WALLS OF LACTOBACILLUS BULGARICUS LB-51

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 4 Feb 85) pp 101-109

[Article by O. V. Galkina, N. V. Kashperova, V. A. Razvorotnev, G. I. Kim, O. N. Korobkina, S. A. Degteva, G. M. Sysoyeva and I. M. Levin, Scientific Research Construction-Technological Institute of Biologically Active Compounds, Novosibirsk Oblast]

[Abstract] I. G. Bogdanov obtained blastolysin by ultrasound disintegration of L. bulgaricus biomass. This product showed pronounced antitumor activity. The present article reports composition and biological properties of cell wall components obtained from L. bulgaricus by enzymatic hydrolysis. After gel chromatography on G-50 Sephadex, five components were obtained, four of which exhibited some antitumor and immunostimulating properties. These five fractions contained fragments of glycopeptides, proteins and polysaccharides. In contrast to the inactive form, where they were practically absent, the active component contained muramic acid, glucosamine, alanine, glutamic acid, aspartic acid and lysine. Figures 3; references 22: 8 Russian (2 by Western authors), 14 Western (1 by Russian authors).

7813/5915
CSO: 1840/028

UDC 547.963.32.07

CHEMICAL-ENZYMATIC SYNTHESIS AND CLONING OF HUMAN BIOLOGICALLY ACTIVE β-INTERFERON GENE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 290, No 1, Sep 86
(manuscript received 13 Mar 86) pp 244-249

[Article by V. P. Kumarev, M. I. Rivkin, H. V. Amirkhanov, L. V. Baranova, V. S. Bogachev, M. L. Kobets, S. I. Oshevskiy, L. V. Obukhova, V. N. Rybakov, K. D. Kuznedelov, S. I. Vershinina and V. V. Gulevich, Institute of Cytology and Genetics, Siberian Department, USSR Academy of Sciences, Novosibirsk]

[Abstract] Chemical-enzymatic synthesis of DNA has made possible the production of small genes. One of the major advantages of this approach is that the

genes constructed are as closely adapted as possible to operation in the host cell. Synthetic genes are unique tools for the study of the functional typography of the proteins which they code. The synthetic genes for α_1-. α_2- and γ human interferons have been described. This work presents the results of synthesis, cloning and expression of a human β-interferon gene. The full gene was assembled of cloned blocks in three stages. The functional activity of the synthesized fragment was tested by insertion in a vector which expressed the gene. The vector of the plasmid pSK lac95-1 was selected, since it contains all the elements necessary for controlled expression: the lac UV5 promoter, lac-operator and SD site. A coarse extract of the induced cells was tested for antiviral activity in suppression of the cytostatic effect of a vesicular stomatitis virus on human fibroblasts. The results of two independent measurements showed that the cell extracts with the hybrid pSK IFN plasmid had a manifest protective effect determined by the presence of the β-interferon in the extracts. References 13: 2 Russian, 11 Western.

6508/5915
CSO: 1840/012

UDC 577.113 + 577.213.3 + 547.963.32

EXPERIMENTAL MODEL AND POSSIBLE MOLECULAR MECHANISM OF INDUCED DELETION MUTAGENESIS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 290, No 1, Sep 86 (manuscript received 24 Feb 86) pp 249-253

[Article by V. A. Petrenko, S. I. Tatkov, A. N. Boldyrev, L. N. Semenova, G. F. Sivolobova and V. A. Karginov]

[Abstract] One genetic result of the effects of chemical reagents and radiation on nucleic acids is the formation of deletions. Processes of DNA repair play a special role in the formation of deletions, which arise primarily between homologous DNA sectors. This work produces a molecular model reflecting probably intermediate DNA states during the course of repair of mutagenesis and studies it in vitro and in vivo in order to clarify the mechanism of formation of deletions. The model is a special complex obtained by hybridizing the plus chains of DNA of the phage m13mp9 with the minus chain of the replicative form of DNA of the phage m13mpB split at the BamHI site. The complex contains a single-chain gap 37 nucleotides in length. The use of the model avoids studying of initial stages of the repair process which are specific to various types of DNA damage and require the participation of various groups of enzymes. The path of repair studied, which leads to the formation of deletions, is less probable if only one strand of the double-chain DNA is damaged. Where both sides of the double helix are damaged it becomes the only possible way out of a lethal dead end. The data obtained in this article represent factual confirmation and development of an earlier model by Streisinger et al., developed by them to explain the development of frame shift mutations. Figures 2; references 11: 6 Russian, 5 Western.

6508/5915
CSO: 1840/012

UDC 579.842.15:[579.222:577.152

RESTRICTING ENDONUCLEASES FROM SHIGELLA SONNEI 47

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian Vol 31, No 2, Mar-Apr 85 (manuscript received 9 Apr 84) pp 131-136

[Article by T. M. Uporova, I. M. Kartashova, Ye. A. Skripkin, Ye. N. Lopareva, I. I. Nikolskaya and S. S. Debov, Scientific Research Institute of Medical Enzymology, USSR Academy of Medical Sciences, Moscow]

[Abstract] A study was made to detect restrictases among representatives of the genus shigella. Isolation and purification of restrictases from S.Sonnei 47 are described. The method used involved cation exchange chromatography with final purification by hydrophobic chromatography on phenyl sepharose in a combined triton concentration gradient. The enzymes Sso I and Sso II isolated are typical class II restrictases. Sso I is an iso-shizomer of the EcoRI restrictase from E. coli. Sso II is a new enzyme. Figures 5; references 13: 3 Russian, 10 Western.

6508/5915
CSO: 1840/026

UDC 577.152.361*3:577.112.5

NUCLEOTIDE SEQUENCE OF cDNA AND PRIMARY STRUCTURE OF BETA-SUBUNIT OF SWINE KIDNEY Na^+,K^+-ATPase

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 6, Apr 86 (manuscript received 29 Nov 85) pp 1491-1496

[Article by Yu. A. Ovchinnikov, academician, N. Ye. Broude, K. Ye. Petrukhin, A. V. Grishin, N. I. Kiyatkin, N. M. Arzamazova, N. M. Gevondyan, Ye. N. Chertova, A. M. Melkov, Yu. V. Smirnov, I. V. Malyshev, G. S. Monastyrskaya and N. N. Modyanov, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow]

[Abstract] Standard techniques were employed in elucidating the nucleotide sequence of cDNA corresponding to the translatable mRNA of the beta subunit of swine kidney Na^+,K^+-ATPase (EC 3.6.1.3), as well as the amino acid sequence of this subunit. The nucleotide map depicted was correlated with the corresponding amino acid sequence and actually determined amino acid sequences for the beta-subunit. The beta-subunit was shown to consist of 302 amino acids and to have a MW of 34958. Analysis of the amino acid sequences showed three extended hydrophobic regions--34-61, 197-214 and 223-260--containing hydrophilic residues amounting to 14, 28 and 18% of the residues, respectively. Comparison of the primary sequence of the beta-subunit with the sequences for other transport ATPases did not reveal homologies other than those due to

chance. It appears, therefore, that the beta-subunit of the Na^+,K^+-ATPase has no analog among other ion transporting ATPases. Figures 2; references 15: 6 Russian, 9 Western.

12172/5915
CSO: 1840/455

UDC 577.112.5

CYCLIC GMP-PHOSPHODIESTERASE OF BOVINE RETINA: AMINO ACID SEQUENCE OF GAMMA-SUBUNIT

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 6, Apr 86 (manuscript received 3 Mar 86) pp 1496-1498

[Article by Yu. A. Ovchinnikov, academician, Kh. G. Muradov, M. Yu. Feygina, I. V. Nazimov, N. I. Khoroshilova, V. V. Shemyakin, N. B. Akhmedov and V. M. Lipkin, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow]

[Abstract] Standard enzymatic methods were employed in sequencing the gamma-subunit of cyclic GMP-phosphodiesterase, in combination with automated amino acid analyzer and sequencer. The combination of enzymatic and cyanogen bromide techniques revealed the complete sequence of the gamma-subunit, consisting of 87 amino acid residues with an equivalent MW of 9700 daltons. This peptide chain is a basic protein with 10 of its 13 basic amino acids concentrated in the 24-45 segment, and an acetylated N-terminal amino group. These data provided the basis for the synthesis of two unique overlapping nucleotide probes (1-16 and 12-27 amino acid sequences), which led to the isolation of three independent clones containing gamma-subunit cDNA. Figures 1; references 6: 2 Russian, 4 Western.

12172/5915
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UDC 577.158.52

PARTICIPATION OF ACTIVE FORMS OF OXYGEN IN FERULIC ACID TOXICITY MECHANISM

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 85 (manuscript received 15 Aug 83) pp 521-527

[Article by A. A. Averyanov and V. P. Lapikova, All-Union Scientific Research Institute of Phytopathology, Bolshiye Vyazemy, Moscow Oblast]

[Abstract] The toxicity of phenol compounds for pathogenic microorganisms is of interest for an understanding of the nature of plant immunity and for the search for means to control it. This article attempts to determine the participation of active forms of oxygen in the mechanism of toxicity of

ferulic acid and systems of its peroxidase oxidation; it reports the effect of substances neutralizing various oxygen intermediates on toxicity. Ferulic acid was found to inhibit the growth of P oryzae conidia, regardless of whether ethanol was present or not. Substances which neutralize active forms of oxygen protected the conidia from injury by ferulic acid. Time studies indicated that suppression of spore growth was greatest at the beginning of the reaction, linearly decreasing over the next 30 minutes. Toxicity was, therefore, entirely a result of intermediate products. The protective reaction of infected plants may be mediated by active forms of oxygen. Figures 2; references 29: 8 Russian, 21 Western.

6508/5915
CSO: 1840/020

UDC 577.213.6

ENZYMATIC AND STRUCTURAL MECHANISMS OF DNA REPAIR IN ISOLATED MAMMALIAN CHROMATIN

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 85 (manuscript received 3 May 83) pp 562-571

[Article by V. M. Krutyakov, N. V. Belyakova, T. P. Kravetskaya and S. N. Naryzhnyy, Leningrad Institute of Nuclear Physics imeni B. P. Konstantinov, USSR Academy of Sciences, Gatchina]

[Abstract] Eukaryotic DNA, in the process of repair, forms an insoluble complex with structural chromatin proteins and genetic enzymes. Chromatin is an adequate system for studies of the composition and functional properties of repair enzymes. In this study, human cells were cultivated in a nutrient medium containing 10-20% bovine serum. Chromatin was irradiated at 1,500 Gr, and dNTP was added at 0.2mM, DNA-ligase at 100 units per ml. The lysed chromatin was placed in a column containing CL-SEPHAROSE 2B and eluted at 25°C. The nucleosome structure was analyzed by electrophoresis of the chromatin DNA in 1.5% agarose gel or 10% polyacrylamide gel. The chromatin system studied was found to allow not only observation of the stages of DNA repair, but also investigation of the effects on these processes of various pharmacologic substances directly in the chromosome material without interference of metabolism of the cyto-and nucleoplasm. Figures 4; references 31: 15 Russian, 16 Western.

6508/5915
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UDC 612.351.11:577.152.1].014.46:577.123.3

EFFECTS OF SUBSTANCES ALTERING INTRACELLULAR LEVELS OF cAMP ON OXIDATIVE METABOLISM ENZYMES OF XENOBIOTICS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 2, Mar-Apr 86 (manuscript received 29 Oct 84) pp 49-52

[Article by M. I. Bushma, P. I. Lukiyenko and L. F. Legonkova, Laboratory of Biochemical Pharmacology (Chief: P. I. Lukiyenko), Division of Metabolic Regulation, BSSR Academy of Sciences, Grodno]

[Abstract] Substances which affect the intracellular levels of cAMP (insulin, isodrine and theophyline) have been shown to exert varying effects on rat liver endoplasmic reticulum monooxygenase activity. However, these in vitro experiments performed on rats showed that cAMP was not a direct stimulator of microsomal oxidation in liver. It acted probably through phosphorylation of microsomal redox chain components. This hypothesis was supported independently by data obtained by other investigators. Figure 1; references 16: 3 Russian, 13 Western.

7813/5915
CSO: 1840/039

UDC 577.1

CYCLO-HMP-PHOSPHODIESTERASE FROM CATTLE RETINA. NUCLEOTIDE SEQUENCE OF cDNA γ SUBUNIT

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 288, No 6, Jun 86 (manuscript received 1 Apr 86) pp 1505-1507

[Article by Academician Yu. A. Ovchinnikov, V. V. Gubanov, N. V. Khramtsov, N. B. Akhmedov, V. Ye. Zagranichnyy, K. A. Ishchenko, Kh. G. Muradov, A. A. Barinov, V. A. Bondarenko, V. P. Kumarev, V. F. Kobzev and V. M. Lipkin, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow; Institute of Cytology and Genetics, Siberian Department, USSR Academy of Sciences, Novosibirsk]

[Abstract] A library of cDNA clones from bovine retina was obtained containing $5 \cdot 10^5$ recombinants; nucleotide sequence of cDNA γ-subunit of cyclo-HMP-phosphodiesterase was isolated and determined. Restriction analysis of cloned DNA fragments isolated from three clones showed their close homology. Complete nucleotide sequence of the studied fragment cDNA with 833 base pairs was reported. Comparison of the aminoacid sequence of the isolated protein with the sequence of γ-subunit of cyclo-HMP-phosphodiesterase showed that the isolated cDNA fragment contains the entire structural portion of the gene of this protein. Figure 1; references 15: 3 Russian, 12 Western (3 by Russian authors).

7813/5915
CSO: 1840/005

UDC 577.15.02

ENZYME STABILIZATION BY MEANS OF CHEMICAL MODIFICATION WITH CYCLIC ANHYDRIDES OF AROMATIC ACIDS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 288, No 6, Jun 86 (manuscript received 18 Dec 85) pp 1508-1512

[Article by V. A. Shikshnis, N. Z. Galkantayte, G. Y. Denis, E. V. Butkus, V. V. Mozhayev, K. Martinek and Corresponding Member of USSR Academy of Sciences I. V. Berezin, Scientific Production Association "Ferment", Vilnyus, Vilnyus State University imeni V. Kapsukas, Moscow State University imeni M. V. Lomonosov]

[Abstract] It is shown that chemical modification of an enzyme with cyclic anhydrides of aromatic carboxylic acids make it possible to introduce several carboxyl groups on the surface of a protein globule and thus result in considerable increase in thermal stability of the protein. The experiments were performed with α-chemotrypsin which was reacted with pyromellitic acid anhydride. Thermal stability of this product equalled that of proteolytic enzymes isolated from experimental thermophilic bacteria (the most stable of all known proteases). The most probable cause for this stabilization is hydrophilization of the protein surface. Figures 3; references 15: 3 Russian, 12 Western (2 by Russian authors).

7813/5915
CSO: 1840/005

BIOPHYSICS

UDC 571.3

MOLECULAR PUMPS BASED ON MACROCYCLIC COMPLEXES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 289, No 6, Aug 86
(manuscript received 14 Mar 86) pp 1500-1504

[Article by A. A. Varnek and P. D. Brezhestovskiy, Moscow Chemical-Technological Institute imeni D. I. Mendeleyev, All-Union Scientific Cardiology Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] Selectively-induced ionic transport through biological membranes is one of the more fundamental properties of nerve, muscle and other cells. A unified principle of the organization of energetic surface could be proposed for structures responsible for directed ionic transport. In this paper an attempt is made to describe such a principle and related hypothetical structures based on macrocyclic complexes (crown esters) which could serve as molecular pumps. Crown esters are saturated macrocyclic polyesters with oxygen atoms oriented towards the surface of internal cavity. This fact is responsible for hydrophilic properties of the internal surface and hydrophobic ones of the exterior of the macrocycle. Electrostatic potentials of some crown esters were calculated. Taking 8-crown-6 as an example, it was shown that, according to quantum-chemical calculations, the electrostatic potential distribution (EPD) is characterized by an area of negative values in the macrocycle cavity, leading to a reasonable interpretation of crown ester properties. The negative area of EPD corresponds to oxygen atom charge distribution. Obviously, if the cavity is increased without changing the number of oxygen atoms, average value of the potential in the cavity must decrease. Figures 3; references 13: 7 Russian (2 by Western authors), 6 Western.

7813/5915
CSO: 1840/009

UDC 577.3

EFFECTS OF SELENOMETHIONINE ON PROTON MAGNETIC RELAXATION IN HEPATIC TISSUE OF X-IRRADIATED ANIMALS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 6, Apr 86 (manuscript received 5 Jul 85) pp 1481-1484

[Article by V. S. Kovach, Budapest State University imeni Yeotvesh Roland (sic) (Lorand)]

[Abstract] In view of the fact that the Se atom has a much larger radius than the S atom, spin lattice relaxation time (T_1) measurements were conducted on hepatic tissue of mice injected with selenomethionine to assess the effects of Se on protein conformation. The study was conducted on BALB mice injected intraperitoneally with 0.008 mmoles/kg of selenomethionine with and without subsequent x-irradiation (200-600 r). Administration of selenomethionine led to a decrease in the T_1 values of intact animals 18 and 24 h after the injection. Irradiation led to a dose-related increase in T_1. Animals pretreated with selenomethionine and irradiated with 200 or 450 r doses showed changes analogous to those seen in tissues of animals subjected to irradiation alone. However, selenomethionine-treated animals irradiated with the 600 r dose showed a hepatic tissue T_1 value lower than that of control T_1 value, which was most diminished 24 h after irradiation. These data were interpreted to indicate that the Se atom induced conformational changes in hepatic protein molecules. Figures 2; references 6: 4 Romanian, 2 Russian.

12172/5915
CSO: 1840/455

UDC 577.15.088.2

ISOLATION METHOD FOR HIGHLY PURIFIED RESTRICTASE Xba I

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 14 Feb 85) pp 26-30

[Article by V. F. Maystrenko, A. V. Selina, V. P. Romanov, G. D. Serov and N. M. Pustoshilova, Scientific Research Construction-Technological Institute of Biologically Active Compounds, Novosibirsk Oblast]

[Abstract] A method for isolating highly purified restrictase Xba I is described along with selection of nutrient media for cultivation of the producer strains. All three of the studied media: peptone-yeast; a medium containing albumin and nutrient bullion Difco assured about the same growth rate of the strain. The isolation procedure included ultrasonic disintegration of the biomass, fractionation in PEG-dextran system and chromatography on DEAE-cellulose and modified silochrome column. The peptone-yeast extract was optimal as a nutrient medium for cultivating the producing strain. Cell yield was 4.5 ± 0.6 g/l with the restrictase content of $3.5\pm1.1\cdot10^3$ U per gram of wet cells . The isolate was free of impurities (non-specific nucleases and phosphatases), it was stable for at least 6 months on storage and the yield of purified enzyme was $47\pm11\%$ of its content in the cell extract. Figures 4; references 8: 1 Russian, 7 Western.

7813/5915
CSO: 1840/028

UDC 577.112.083:578.832.1A

CHROMATOGRAPHIC PURIFICATION OF INFLUENZA A VIRUS PROTEIN

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86 pp 62-66

[Article by I. M. Savich, V. V. Shaprov and I. Kh. Aminev, All-Union Scientific Research Institute of Molecular Biology, Koltsovo, Novosibirsk Oblast]

[Abstract] A simple technological method was proposed for purification of influenza A virus proteins making it possible to obtain principal components in quantities adequate for immunochemical studies. The two step method

involved solubilization of surface proteins with 0.3% tritone H-100 solution and centrifugation separation followed by chromatographic fractionation of isolated proteins after their treatment with sodium dodecylsulfate under reducing conditions. Heavy and light chains of hemagglutinin, nucleoproteid and membrane proteins were thus isolated from two strains of influenza virus A 385/80 and 54/80 (Leningrad). Their aminoacid composition was determined; protein homogeneity was established by sodium dodecyl sulfate electrophoresis. The immunochemical properties of these proteins were retained during storage. Figures 2; references 15: 5 Russian (1 by Western authors), 10 Western (2 by Russian authors).

7813/5915
CSO: 1840/028

UDC 547.211.057:579.851.11.083.134

KINETICS AND METHANE FORMATION MECHANISM BASED ON METHANOGENIC ASSOCIATION OF MICROORGANISMS. PART 1: DYNAMICS OF METHANOL CONVERSION

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 8 Oct 85) pp 94-100

[Article by S. V. Kalyuzhnyy and S. D. Varfolomeyev, Moscow State University imeni M. V. Lomonosov]

[Abstract] To study the dynamics of anerobic formation of methane, a model was selected: thermophilic methanogenic association known as Methanobacillus kuzneceovii which represents a stable thermophilic consortium of three microorganisms grown on different media. Chemical reactions taking place under the influence of biocatalytic microorganism systems of this association were studied searching for the most important ones in this system. The variables included initial concentrations of methanol, pH and various dilutions. For the continuous process, optimal conditions are: pH 6.5, MeOH concentration 620 mM and a dilution rate of 0.073 hr^{-1}. Keeping the conversion rate of methanol constant, the continuous process showed a 3-7-fold increase in the formation rate of methane as compared to the batch process. The following was proposed as the kinetic scheme for conversion of methanol to methane:

$4\ Ch_3OH \xrightarrow{M_1,\ H+} CH_3COO^- + H^+ + 2\ CH_4 + 2\ H_2O$

$CH_3COO^- + H^+ \xrightarrow{M_2,\ H+} CH_4 + CO_2$, where M_1 and M_2 are participating microorganism cultures. Figures 3; references 18: 13 Russian (1 by Western author), 5 Western.

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UDC 579.841.11.083.13.004.14

MICROBIOLOGICAL CONTROL OF PSEUDOMONAS THERMOPHILA K-2 DURING CONTINUOUS CULTIVATION

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 28 Oct 85) pp 124-126

[Article by V. V. Kotolev and N. N. Karlina, Institute of Biochemistry, BSSR Academy of Sciences, Grodno]

[Abstract] The goal of this work was to study morpho-physiological characteristics of thermophilic hydrogen bacteria in order to be able to control the cultures during the process of continuous cultivation. It was shown that in continuous cultivation under laboratory and pilot plant conditions the culture of hydrogen bacteria was not homogenic; the Ps. thermophila K-2 cells may differ in their dimensions. The number of viable cells was directly related to the size of these cells in culture medium and eventually to higher population density. Figures 2; references 10: 8 Russian, 2 Western.

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CSO: 1840/028

UDC [541.183:546.59]:579.8

DETERMINATION OF LOCALIZATION AND ISOLATION OF COLLOIDAL-GOLD-BINDING FACTOR FROM MICROBIAL CELLS

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 19 Jun 85) pp 109-115

[Article by Z. R. Ulberg, V. I. Karamushka, T. G. Gruzina, V. I. Podolskaya, S. V. Garbara, L. G. Zakopaylo and N. V. Pertsov, IKKhKhV--possibly Institute of Colloidal Chemistry and Water Chemistry--imeni A. V. Dumanskiy, UkSSR Academy of Sciences, Kiev; Moscow State University imeni M. V. Lomonosov]

[Abstract] Studies concerning reactions of microbial cells with metals and oxides in colloidal state are rather limited. In this paper, results are reported on localization and isolation of substances from microbial cells capable of binding gold particles. The results showed that monoculture cells grown under identical conditions differed in their ability to attract metal particles on their surface. Use of butanol made it possible to extract a water-soluble factor capable of coagulating colloidal gold (FCCG) from microbial cells. This factor is localized in membrane structures or in cell walls and evidently determines their ability to accumulate metallic particles on their surface. It was proposed that FCCG is a glycoproteid. Figures 6; references 11: 4 Russian, 7 Western.

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UDC 579.879.71.25

USE OF LIPOSOMES IN TRANSFORMATION OF STREPTOMYCES GRISEUS PROTOPLASTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 288, No 6, Jun 86
(manuscript received 15 Oct 85) pp 1491-1493

[Article by A. S. Stenko, B. P. Matselyukh, T. D. Dekhtyarenko, Ye. Ye. Stefanishin, A. V. Stefanov and Academician of UkSSR Academy of Sciences V. K. Lishko, Institute of Microbiology and Virology imeni D. K. Zabolotnyy, UkSSR Academy of Sciences, Kiev]

[Abstract] Liposomes are used in molecular-biological and genetic studies to introduce genetic material into animal and plant cells and into plant and microorganism protoplasm. An attempt was made to perform genetic transformation of Streptomyces griseus protoplasts using chromosomal and plasmid DNA inserted in liposomes. Insertion of DNA depended on the change of liposome membrane, reaching 8% of the starting DNA with positively charged liposomes (1.6% and 0.8% with neutral and negatively charged ones, respectively). It was shown that transformation of DNA chromosomal protoplast included in liposomes occurred very effectively about two orders of magnitude higher than in case of DNA plasmid with no liposomes. The molecular mechanism of DNA absorption was not clear but it was hypothesized that the liposomes functioned as synthetic protoplasts: the membranes of liposomes and protoplasts blended, their contents intermixed, leading to recombination between genetic apparatus of the protoplasts and inserted DNA. Figure 1; references 13: 1 Russian, 12 Western.

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CSO: 1840/005

UDC 579.842.11.254.2

INFLUENCE OF LIPOSOMES ON GENETIC TRANSFORMATION OF INTACT ESCHERICHIA COLI CELLS

Moscow BIOTEKHNOLOGIYA in Russian No 2, Mar-Apr 86
(manuscript received 5 Nov 85) pp 19-22

[Article by V. A. Chernyavskiy and Yu. P. Zerov, All-Union Scientific Research Institute of Especially Pure Biological Preparations, Leningrad]

[Abstract] Liposomes have been successfully used as intermediates in transmission of genetic material in the cells of microorganisms. This article studies the influence of the presence in the incubation mixture of liposomes from E. coli total lipid, both free and containing encapsulated plasmid DNA, on genetic transformation of intact cells of this microorganism in the presence of calcium ions. The study showed that when plasmid DNA encapsulated in liposomes is present in the incubation mixture, the transformation results primarily from the presence of free DNA in the incubation medium. Plasmid DNA

contained in the internal volume of the liposomes, like the complexes of DNA with the outer surface of the lipid vesicles, apparently does not participate or only very slightly participates in genetic transformation of intact HB101 E. coli cells. References 10: 2 Russian, 8 Western.

6508/5915
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UDC 579.254:579.842.11

TRANSFECTION OF ESCHERICHIA COLI SPHEROPLASTS WITH PHAGE DNA ENCAPSULATED IN LIPOSOMES

Moscow BIOTEKHNOLOGIYA in Russian No 2, Mar-Apr 86
(manuscript received 5 Nov 85) pp 23-27

[Article by V. A. Chernyavskiy, M. A. Korzhenevskaya, Yu. P. Zerov and V. G. Popov, All-Union Scientific Research Institute of Especially Pure Biological Preparations, Leningrad; "Biopreparat" Production Association]

[Abstract] Previous studies reported the inhibiting influence of E. coli lipid vesicles on transformation of intact cells of this microorganism by the calcium method. This article utilizes not the cells but the spheroplasts as the recipient, allowing contact between the cell and liposome membranes. The total lipid fraction from E. coli M17 cells was extracted. The replicative form of DNA of the bacteriophage fd105 was extracted from the E. coli. Spheroplasts of E. coli AT1371 were prepared by treating a growing culture with penicillin. The possibility and advantages of using liposomes to transfer transforming DNA to bacterial cells were demonstrated on the example of E. coli spheroplasts. References 12: 5 Russian, 7 Western.

6508/5915
CSO: 1840/029

UDC 575.133.083.12

METHOD OF PRODUCING HIGHLY PURIFIED PLASMID pBR 322

Moscow BIOTEKHNOLOGIYA in Russian No 2, Mar-Apr 86
(manuscript received 9 Aug 85) pp 38-41

[Article by L. Ya. Denisova, Ye. V. Kileva and V. A. Philippov, Scientific Research, Design and Technological Institute of Biologically Active Substances, Novosibirsk Oblast]

[Abstract] Methods of separating bacterial plasmids available today can be divided into two groups: Those including high speed centrifugation in a cesium chloride density gradient, and chromatographic methods using sorbents. The former method requires expensive equipment; the latter group of methods

encounter difficulties due to the unavailability of most sorbents. This work suggests a simple method for purifying plasmid DNA including alkaline lysis of cells, precipitation of RNA with lithium chloride and chromatography on hydroxylapatite in the presence of 8M urea. Preparations of DNA pBR 322 obtained by the method are suitable for genetic engineering, restrictase analyses and investigation of in vitro transcription and transformation. The method can also be recommended for the production of other plasmids. Figure 1; references 17 (Western).

6508/5915
CSO: 1840/029

UDC 547.995.12.004.14:541.18.041.2

ESTIMATE OF FLOCCULATING CAPABILITY OF CHITOSANES ISOLATED FROM VARIOUS SOURCES OF CHITIN

Moscow BIOTEKHNOLOGIYA in Russian No 2, Mar-Apr 86
(manuscript received 11 Jun 85) pp 80-85

[Article by A. Ya. Teslenko, N. I. Kuptsova, T. F. Girfanova, N. P. Shestova and Yu. V. Medvedev, All-Union Scientific Research Institute of Especially Pure Biological Preparations, Leningrad]

[Abstract] The broad utilization of flocculation in the microbiology industry is limited by lack of knowledge of materials facilitating complete separation of cells from the dispersion medium and other problems. The purpose of this work was selection and synthesis of rigid-chain type flocculants based on natural chitin polysaccharide obtained from krill, crabs and microscopic fungi suitable for concentration of bacterial suspensions, as well as determination of relationships between flocculant chemical structure and flocculating capacity. It was found that the effectiveness of flocculation of suspensions of E. coli cells was determined by the positive charge density and thermodynamic rigidity of rigid chain flocculant macromolecules. Chitosanes obtained from a number of microscopic aspergillus and mucor fungi are effective flocculants for E. coli suspensions. However, the method used for their isolation produces very low yields. The most probable mechanism of flocculation for rigid-chain flocculants was found to be bridge formation and for flexible chain flocculants it was charge neutralization. Figures 4; references 7: 5 Russian, 2 Western.

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UDC 663.14.033.2.003

OPTIMIZING SELECTION OF TYPES AND VOLUMES OF ENZYMES CONSIDERING MULTIPLE EFFECTIVENESS CRITERIA

Moscow BIOTEKHNOLOGIYA in Russian No 2, Mar-Apr 86
(manuscript received 22 Jul 85) pp 107-115

[Article by V. N. Danilov and B. G. Litvak, All-Union Scientific Research Institute of Bioengineering, Moscow]

[Abstract] An important task in bioengineering is selection of the best type and volume of enzymes to assure high effectiveness of newly planned and redesigned bioengineering production facilities. An analysis of this class of problem conducted by the authors has previously shown that these are multiple-criterion problems. This article suggests a comparatively simple multiple-criterion procedure for determining the optimal type and volume of enzymes from a predefined set of alternatives based on the use of expert evaluation methods and multiple-criterion optimization. The procedure is tested by solving a problem of selecting the optimal enzyme type for a paprin production line and the optimal volume of the fermenter for a lysine production line. The procedure suggested can be used to automate the process of search for the optimal solution. The procedure is universal and is suggested for optimization not only of types and volumes of enzymes, but also other bioengineering objects in which at least two independent and contradictory criteria must be used to estimate quality. A flow chart of the algorithm for determining optimal fermenter volume is presented. References 7 (Russian).

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CSO: 1840/029

UDC 632.4:633.11:582.285.2

COMPOSITION OF EUROPEAN POPULATION OF WHEAT BROWN RUST PATHOGEN IN 1982/1983

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 19, No 6, Nov-Dec 85
(manuscript received 22 Aug 84) pp 513-515

[Article by T. V. Pavlova, V. A. Zinovskiy and A. G. Izmalkova, North Caucasus Scientific Research Institute of Phytopathology]

[Abstract] Current methods of studying populations of plant diseases based on soil samplings are difficult and do not reflect total variety of all biotypes. Analysis of air specimens was performed for the population of P. recondita f. sp. Tritici. The specimens were collected in 1982 and 1983 over northern Caucasus, Volga Territory and Central Chernozem area. The dominating races were 77,122 and 25. An increasing tendency was noted in race 122 for virulent genes P23 and P24 as well as for biotypes which did not damage the Kavkaz and Skorospelka 35 wheat brands. References 3 (Russian).

7813/5915
CSO: 1840/062

UDC 591.521

CHARACTER OF PENETRATION OF ARAL REGION NON-SYNANTHROPIC MAMMALS INTO HUMAN ABODES

Sverdlovsk EKOLOGIYA in Russian No 6, Nov-Dec 85
(manuscript received 11 Nov 84) pp 65-68

[Article by L. A. Burdelov, I. Zh. Zhubanazarov, Ye. P. Kartushin, N. F. Rudenchik and V. F. Ten, Central Asian Scientific Research Anti-Plague Institute, Alma-Ata; Aral Sea Anti-Plague Station, Aralsk]

[Abstract] Each year, the Aralsk Anti-Plague Station examines at least 70 villages in the southern half of Aktyubinsk and Kzyl-Ordinsk oblasts in February-March and again in November-December to determine the population of rodents in human housing. Additional population counts are performed in June and October, using one trap per ten square meters. The data were used in studies of the seasonal dynamics of penetration of small mammals into human

residences in this area. For the first time, direct proof was obtained of systematic invasion of housing in the fall. An exception to this was the gray hamster, which was not found to invade homes more as the weather turned cold. References 16: 14 Russian, 2 East European.

6508/5915
CSO: 1840/015

UDC 577.391:547.963.3

ABILITY OF INTERFERONS (LEUCOCYTIC AND RECOMBINANT α_2) TO PROTECT DNA AND TO STIMULATE REPAIR PROCESSES IN HUMAN CELLS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 4, Apr 86 (manuscript received 11 Oct 85) pp 995-997

[Article by I. M. Vasilyeva, T. A. Sinelshchikova, N. N. Shoniya and G. D. Zasukhina, Institute of General Genetics imeni N. I. Vavilov, USSR Academy of Sciences, Moscow]

[Abstract] A novel activity of interferon [IF] was observed: anticlastogenic effect of leucocytic and fibroblastic IF expressed by lower quantity of chromosomal aberrations and sister chromatid exchanges induced by physical and chemical mutagens. Leucocytic IF also stimulated DNA repair synthesis. Specifically, effect of above IF on the recombination of split DNA (induced by nitrosoguanidine) was investigated. Domestically produced IF was used. The antimutagenic action of IF is based on its ability to affect cell repair processes: the number of DNA breaks was lower in cells treated with either of the IF. Figure 1; references 10: 6 Russian, 4 Western.

7813/5915
CSO: 1840/451

UDC 578.2

GENETIC ENGINEERING STUDIES OF GENOMIC VIRAL RNA USING ADDRESSED CLEAVAGE FOLLOWED BY LIGATION OF RNA MOLECULE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 4, Apr 86 (manuscript received 21 Oct 85) pp 1005-1008

[Article by N. P. Rodionova, L. G. Tyulkina, O. V. Karpova and I. G. Atabekov, academician, VASKhNIL, Moscow State University imeni M. V. Lomonosov]

[Abstract] The method of addressed cleavage with subsequent ligation was used to study the role of internal poly(A)-sequence and 3-terminal τ RNA-like structure in barley striped mosaic (BSMV) virus replication. The RNA fragments formed during endonucleic hydrolysis had an OH group at the 3'-terminal and a phosphate--at 5' terminal which made them excellent substrates for

ligation with the T4 RNA-ligase. Ligation of L_{BSMV} and Sh_{BSMV} (the long and short fragments respectively) was very effective: homologic Sh_{BSMV} ligated with non-infectious L_{BSMV} led to infectious material; ligation with heterologic Sh_{HBMV} (Hungarian bromegrass mosaic virus) led to non-infectious products. It was further shown that during one passage of the virus a complete reconstitution of the internal poly A sequence was achieved during replication of RNA BSMV; the mechanism of this process is unknown at present. Figure 1; references 9: 3 Russian, 6 Western (2 by Russian authors).

7813/5915
CSO: 1840/451

UDC 577.218+577.113.4

MAPPING OF BACTERIOPHAGE λ CRO-REPRESSOR INTERACTIONS WITH NONSPECIFIC DNA BY DNA-PROTEIN CHEMICAL CROSSLINKING

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 4, Apr 86 (manuscript received 10 Jan 86) pp 1013-1016

[Article by K. K. Ebralidze, S. K. Volkov, M. P. Kirpichnikov, A.D.Mirzabekov corresponding member of the USSR Adademy of Sciences and A. A. Bayev, academician, Institute of Molecular Biology, USSR Academy of Sciences, Moscow]

[Abstract] Using the method of covalent crosslinking between partially apurinized synthetic polynucleotide poly-(A):poly-d(AT) and positively charged primary amino groups of the cro-repressor of λ bacteriophage, peptide maps were obtained of the repressor fragments which interacted with nonspecific DNA. It was shown that several cro-repressor lysines participated in supporting nonspecific complexes with DNA; one of these lysines exceeds all others in its cross linking effectiveness with DNA. It was assumed that in these nonspecific complexes, one of the secondary repressor structure elements is in an especially tight contact with the double helix (peptide T12). The effectiveness of repressor crosslinking with polynucleotide was sensitive to ionic strength of the solution. Identification of the peptide T12 will illuminate the segment of the repressor polypeptide chain which interacts most intensively with nonspecific DNA. Peptide maps of the repressor cross-linked with the operator will show possible structural differences in specific and nonspecific complexes with DNA. Figures 3; references 14: 2 Russian, 12 Western (3 by Russian authors).

7813/5915
CSO: 1840/451

UDC 275.3

DOUBLE RECOMBINANT POX VACCINE VIRUS EXPRESSING SURFACE ANTIGEN OF B HEPATITIS VIRUS AND THYMIDINEKINASE OF HERPES SIMPLEX VIRUS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 289, No 6, Aug 86 (manuscript received 31 Mar 86) pp 1493-1496

[Article by A. D. Altshteyn, O. G. Andzhaparidze, T. P. Antopova, A. A. Bayev, D. Baysar, K. A. Bendukidze, S. I. Gorodetskiy, L. G. Zakharova, M. V. Kryazhevskaya, G. V. Pashvykina, I. I. Fodor and V. I. Chernos, Institute of General Genetics imeni N. I. Vavilov, USSR Academy of Sciences, Moscow; Institute of Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences, Pushchino, Moscow Oblast; and Moscow Scientific Research Institute of Viral Preparations]

[Abstract] The principle of inclusion of foreign expressing genes into pox vaccine virus genome (PVV) was developed some time ago leading to new recombinant PVV's containing one foreign expressing gene such as the S-gene of surface antigen (BHsAg) of hepatitis B virus (HBV) and thymidinekinase gene (tk) of Herpes simplex virus (HSV). PVV is an approved vaccine virus used in preparations of live polyvalent vaccines for medical and veterinary use. In this paper gradual transformation of PVV with two foreign expressing genes was described: S-gene HBV and tk-gene HSV. The recombinants LIOGEN-HB 32/tk^- and LIOGEN-HB 32/tk^+ exhibited high productivity of HBsAg; they caused high antibody titer to the antigen in vaccinated animals and drastically reduced neurovirulence, as compared to LIVP strain widely used in pox vaccination. Such recombinants may be used in studies of prophylactic vaccination of humans against hepatitis B. Figure 1; references 13: 4 Russian, 9 Western.

7813/5915
CSO: 1840/009

UDC 575.127.3:581.1:577.3

EFFECT OF FROST RESISTANT SOFT WHEAT D-GENOME CHROMOSOMES ON MITOCHONDRIAL ACTIVITY DURING HYPOTHERMIA

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 288, No 6, Jun 86 (manuscript received 22 Dec 85) pp 1488-1491

[Article by V. K. Voynikov, N. N. Varakina, T. P. Pobezhimova and Ye. G. Zhirov, Siberian Institute of Physiology and Biochemistry of Plants, Siberian Department, USSR Academy of Sciences, Irkutsk and Krasnodar Scientific Research Institute of Agriculture imeni P. P. Lukyanenko]

[Abstract] An assumption was expressed that frost resistant plant cells have some genetic systems controlling functions of mitochondria. An attempt was made to explain which specific chromosomes of soft wheat genome control the functions of mitochondria during the temperature drop of various plants. Two

wheat brands were used: Bezostaya I (frost sensitive) and Albidum I (frost resistant) showing that they differed by their mitochondrial reactions to short-term cooling. Hypothermia led to a transition of mitochondria of frost resistant wheat to a low energy state accompanied by increased rate of non-phosphorylating respiration and lower conjugation of oxidative phosphorylation. No changes were noted in the frost sensitive wheat. It was shown that genes controlling activity of mitochondria during hypothermia are localized in the 1 and 6 chromosomes of the D-genome. Other chromosomes are not involved in regulating mitochondrial response to cold. Figures 2; references 8: 4 Russian, 4 Western (1 by Russian authors).

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UDC 582.288.45:631.523

OVERCOMING VEGATIVE INCOMPATIBILITY IN PYRICULARIA ORYZAE CAV. BY FUSION OF MYCELIAL PROTOPLASTS

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 19, No 6, Nov-Dec 85 (manuscript received 28 Nov 84) pp 462-466

[Article by N. S. Zhemchuzhina, G. D. Kazakevich, T. M. Voinova, M. N. Shchurov and V. G. Dzhavakhiya, All-Union Scientific Research Institute of Phytopathology, Moscow Oblast]

[Abstract] Phytopathogenic fungi Pyricularia oryzae cav. cause one of the most destructive rice disease. They are difficult to control because of their high mutability which permits them to adapt rapidly to various situations. There are some indications that P. oryzae cav. possess rigid barriers of vegetative incompatibility. The goal of this work was to study the possibilities of overcoming this barrier among its isolates by fusion of mycelial protoplasts. In the course of this investigation, interracial hybrids of this fungus were obtained and their properties were studied. The rate of nuclear multiplication of one or the other parent type in these hybrids was related to various nutritional components added to the minimal nutrient medium. Prototropic clones with conidia were isolated in hybrid generations which contained conidia almost twice the size of original isolates. These clones appeared evidently as the result of diploidy of heterocaryotic mycelium. Diploid nature of these clones was also supported by isolation of recombinants with parent markers. References 13: 5 Russian, 8 Western.

7813/5915
CSO: 1840/062

UDC 632.4:633.16:632.938

BARLEY RESISTANCE TO INFECTIOUS DISEASES PATHOGENS IN RELATIONSHIP TO PLANT BREEDING

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 19, No 6, Nov-Dec 85 (manuscript received 30 Sep 83) pp 502-507

[Article by P. F. Garkavyy (deceased), Ye. K. Kirdoglo and O. P. Garkavyy, All-Union Selection-Genetic Institute, Odessa]

[Abstract] The most widely distributed barley disease in the USSR is barley smut which has reached the level of 14% crop destruction. Other pathogens of barley, domestic and foreign, were reviewed and various resistant brands were reported on. The most resistant forms were found in Ethiopia, Turkey and in India, developed from the brands Jet and Milton. Two methods can be used in deriving new strains: comulative (or convergent) selection and derivation of multilinear sorts with morphologically identical lines carrying various resistance genes. References 10: 5 Russian, 5 Western.

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CSO: 1840/062

UDC 577.115

INFLUENCE OF GANGLIOSIDES ON ACTIVATION OF HUMAN T-SUPPRESSORS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 288, No 6, Jun 86
(manuscript received 14 Feb 86) pp 1497-1500

[Article by E. V. Dyatlovitskaya, V. S. Suskova, V. I. Yemets and L. D. Bergelson, corresponding member, USSR Academy of Sciences, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences; Institute of Transplantology and Artificial Organs, Moscow]

[Abstract] Immunomodulating activity of gangliosides GM_3 (NeuAc2-3Gal1-4Glc1-Cer) and GD_3 (NeuAc2-8NeuAc2-3Gal1-4Glc1-Cer) on lymphocyte blast transformation was studied under the influence of phytohemagglutinin and on the activation of T-suppressors induced by concanavelin A (ConA); brain ganglioside GM_1 (Gal1-3GalNAc1-4Gal(3NeuAc2)1-4Glc-Cer) was used as a control. The data obtained showed that GM_3 and GD_3 gangliosides containing identical oligosaccharide chains and differing only in the number of N-acetylneuraminic acid radicals, exhibited considerable influence on blast transformation of lymphocytes and interaction of various subpopulations in mixed lymphocyte culture. Their immunomodulating mechanism was different, however. Without affecting the blast transformation of lymphocytes during phytohemagglutination stimulation, GM_3 suppressed their proliferation in mixed lymphocyte culture, intensifying generation of T-suppressors or increasing their activity. GD_3 suppressed cell proliferation in mixed lymphocyte culture probably due to inhibition of blast transformation. References 15: 5 Russian, 10 Western.

7813/5915
CSO: 1840/005

UDC 543.08:612.015.1.017.1

EVALUATION OF SORPTION PROPERTIES OF MICROTITRATION VIALS USED IN SOLID PHASE IMMUNOENZYMATIC ANALYSIS BASED ON IMMUNOGLOBULIN G MODEL OF NORMAL HUMAN SERUM

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 21 Oct 85) pp 115-121

[Article by V. S.Bogdanova, I. V. Vikha, A. A. Vorobyev and S. I. Kudryavtsev, All-Union Scientific Research Institute of Biological Equipment Construction, Moscow]

[Abstract] An analysis was reported on various batches of Soviet-produced vials used in solid phase immunoenzymatic analysis (SPIA) based on their ability to absorb immunoglobulin G (IGG) from normal human serum. All vials were made from optically transparent polystyrene; they were produced by the Leningrad Plant for Medical Polymers, the Moscow Pilot Plant of the All-Union Research and Testing Institute of Medical Equipment, and control vials were obtained from Dynatech (Switzerland) and Labor-Technique (FRG) companies. By far the most preferred vials were those with flat bottoms which compared favorably with the selected standard: vials made from immulone. Most of the Soviet-produced vials were satisfactory with the exception of one batch from the Leningrad plant. The round bottom vials should be pretested prior to their use to select batches with admissible characteristics. Figure 1; references 13: 3 Russian (1 by Western authors), 10 Western.

7813/5915
CSO: 1840/028

MEDICINE

NEW ARTIFICIAL HEART MODEL

Moscow TASS in English 15 Oct 86

[Text] A new model of an artificial heart signaling a major advancement in cardiology has been developed in the Soviet Union. The model, "Poisk" (Search), is made of polyurethane, a light and plastic synthetic material. A control unit sets a certain pace to the artificial heart. A computer automatically changes programs of work of the heart ventricles depending on bodily condition.

The experiments have so far been conducted on animals, specifically on calves. Specialists are sure that the artificial heart will ultimately be implanted in a man.

Many artificial heart models have been developed in the USSR and several other countries. In most cases they have one common drawback--a very large power source. According to Boris Petrovskiy, head of the Soviet scientific program, "Artificial Heart" an optimum variant will be the use of energy released by the body itself in biological processes, and, then, no bulky power source will be needed.

/5915
CSO: 1840/081-E

UDC 615.2/.3.032.37+616.37-002-085.2-032

INTRODUCTION OF DRUGS IN FORM OF AEROSOLS DIRECTLY TO PANCREAS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 2, Mar-Apr 86 pp 84-86

[Article by Yu. A. Glivenko, K. D. Toskin and A. I. Beketov, Chair of Pharmacology with Clinical Pharmacology Course of Pediatric Faculty; Chair of General Surgery, Therapy Faculty; Chair of Surgical Diseases, Pediatric Faculty, Crimean Medical Institute, Simferopol]

[Abstract] A method was described for introduction of drug aerosols into closed cavities. This method was shown to be more effective than other treatment modalities for pancreatitis: the inflammatory state was corrected and clinical-laboratory indices were improved substantially. Consumption of the expensive drugs was diminished. There were no undesirable side effects. The instrument consists simply of a needle, the tip of which serves as an atomizer. The drug solution is introduced under pressure. Figure 1; references: 2 (Russian).

7813/5915
CSO: 1840/039

SURGICAL TREATMENT OF HEART DISEASE

Moscow TRUD in Russian 11 Sep 86 p 4

[Article by L. Klyukin under the "Medicine and Life" rubric: "Surgeon Helps Hearts"]

[Abstract] An interview with the director of the Division of the Institute of Cardiovascular Surgery imeni A. N. Bakulev, USSR Academy of Medical Sciences, V. S. Rabotnikov is reported. Among the many heart diseases, ischemic heart disease is the one most prevalent. Formation of atherosclerotic deposits is responsible for stenocardia which is manifested by heart pains. At present, it is impossible to correct this state prophylactically or therapeutically. The only solution is to perform aorto-coronary shunt--a bypass, using a piece of vein from the leg of the patient. This surgery is recommended to chronic ischemia patients who cannot be helped with drugs and, even, to heart attack patients to prevent subsequent attacks. Definite proof of atherosclerotic

deposits must be obtained prior to surgery. Recovery takes about 2-3 months. The youngest patient treated at this Institute was 22 years old, the oldest--73 years. Men by far outnumbered women in these operations. This surgery, however, is not yet used widely in the USSR.

7813/5915
CSO: 1840/033

RESEARCH IN TREATMENT OF LIVER, GALL BLADDER DISEASE

Kiev PRAVDA UKRAINY in Russian 13 Sep 86 p 3

[Article by N. Amosov, academician of the UkSSR Academy of Sciences, Hero of Social Labor: "Strategy for Cure"]

[Abstract] Recent progress in Kiev and Lvov Institutes in therapy and diagnosis of liver and gall bladder diseases is reported. Considerable success has been achieved in developing novel sorbents with magnetic properties for medicinal use, novel procedures and prophylactic measures. Use of laser beams, ultrasonic equipment, hyperbaric oxygenation, hypothermia has led to highly effective therapies. Microsurgical techniques have been developed for pediatric patients. Use of prostheses from special materials in surgery of gall bladder has been developed in Ukrainian institutes. New diagnostic and therapeutic procedures saved, on the average, 540 rubles per patient per year.

7813/5915
CSO: 1840/058

UDC 617.7-001.4-003.61

ANGIOGRAPHIC STUDIES OF SEQUELAE OF FRAGMENTARY WOUNDS OF EYE

Moscow VESTNIK OFTALMOLOGII in Russian Vol 102, No 1, Jan-Feb 86 (manuscript received 10 Jun 85) pp 23-25

[Article by Professor R. A. Gundorova, Doctor of Medical Sciences A. A. Malayev, Candidate of Medical Sciences V. P. Bykov, Physician V. V. Neroyev and Senior Engineer T. I. Balishanskaya, Moscow Scientific Research Institute of Diseases of the Eye imeni Helmholtz, directed by Candidate of Medical Sciences K. V. Trutneva]

[Abstract] A case study was performed to determine the possibility of using angiographic studies of post traumatic changes to the fundus oculi when fragments are located in the membranes of the posterior wall of the eye. The diagnostic potential of angiography to refine the localization of a foreign body and depth of its penetration into the posterior membrane as well as the nature of vascularization around the fragment in order to determine the indications for transvitreal removal of the fragment is determined. Angiography is analyzed as a method for monitoring the effectiveness of barrier

laser coagulation to prevent the development of retinal metallosis. Studies were performed by monitoring 35 patients with fragments in the posterior ocular pole by means of fluorescent angiography. It was determined that angiography is viable as a supplementary method for diagnosis and refinement of the location of foreign bodies in the posterior ocular membranes, supplementing other methods for determination of the indications for transvitreal removal of foreign bodies from these membranes and monitoring the effects of barrier laser coagulation for prophylaxis of ocular metallosis. References 5 (Russian).

6508/5915
CSO: 1840/017

UDC 617-001.17-085.38.015.2:615.246.2]-07:616.15-008.9-074

BIOCHEMICAL CHARACTERISTICS OF SUBSTANCES ADSORBED ON SKN-2M ACTIVATED CARBON DURING HEMOSORPTION IN NORMAL STATE AND AFTER BURN TRAUMA

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian Vol 31, No 2, Mar-Apr 85 (manuscript received 12 Oct 83) pp 94-97

[Article by V. Ye. Ryabinin, A. Ya. Lazovskaya and R. I. Lifshits, Departments of Biochemistry and Surgery, Chelyabinsk Medical Institute]

[Abstract] A study is made of the nature of substances eliminated from the blood of animals during hemosorption in the normal state and after burn trauma. The adsorbent tested was type SKN-2M activated carbon, which has good chemical stability and high capacity for compounds of moderate molecular mass. The experiment was performed on 8 mongrel dogs with third degree burns over 20-25% of the body surface induced by water at 95-97°C. The experiments showed the smears of the adsorbent after hemosorption from the burned animals were highly toxic upon i/v administration to mice, which died within a few seconds with clonic convulsions and respiratory arrest. The use of SKN-2M as an adsorbent was found to achieve elimination, from the blood stream, of peptide compounds of significant biological activity. Following burn pathology, the concentration of these compounds may increase significantly in the blood, creating a toxic background and potentiating metabolic disorders. Figures 2; references 11: 10 Russian, 1 Western.

6508/5915
CSO: 1840/026

MICROBIOLOGY

UDC 582.2/3

BLUE-GREEN ALGAE OF UPPER RACHA

Tbilisi SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 122, No 3, Jun 86, pp 597-600

[Article by L. K. Kukhaleyshvili, Georgian SSR Academy of Sciences Botanical Institute imeni N. N. Ketskhoveli]

[Text] Prior to our investigations, there were two studies in the literature [1, 2] in which nine species of the class Cyanophyta were noted. We attempted within the limits of our possibilities to expand our knowledge about the blue-green algae of the Upper Racha. This entailed, first of all, an identification of their species composition and principal habitat distribution in the indicated territory.

As a result of our investigations in the summer of 1981 we found 45 species and forms of blue-green algae that were divided into the following three classes in the indicated quantities: Twenty-nine species and forms of Hormogoniophyceae, 15 species of Chroococcophyceae, and one species of Chamaesiphonophyceae. The Class Hormogoniophycease was represented by three orders. A large segment of the species found in this class belongs to the order Oscillatoriales (22 species and forms) over one-half of which (19 species and forms) are incorporated into four genuses of the family Oscillatoriaceae. The remaining three species belong to the genus Schizothrix from the family Schizothrichaceae.

The genuses Phormidium and Oscillatoria were identified as varieties in the family Oscillatoriacae of which there were eight species each represented in the reservoirs of the region under examination. Among those species Phormidium autumnale appeared to be the most abundant. This was also characteristic of almost all types of water bodies. We did not find any of other representatives very frequently, although some of them were growing well, such as Oscillatoria brevis, O. terebriformis, O. begiatoiformis f. caucasica, Phormidium favosum, and Ph. bohneri. As regards to representatives of the other genuses of this family (Sprulina, Lyngbya), they were encountered with extreme rarity and hardly played any role at all.

The following two orders -- Stigonematales and Nostocales -- were represented by the smallest variety of species, a total of seven from five families. The most abundant species of that group were Nostoc paludosum and Scitononema ocellatum, but as was the case with the remaining representatives of these orders, they had a very limited distribution and were not of much significance.

The class Chroococcophyceae in the water bodies of the region under examination was represented by one order -- Chroococcales which includes six genuses. In the order of their predominance, these were: Gloeocapsa -- five species, Microcystis -- 4 species, and Merismopedia -- three species. The genuses Tetrarcus, Dactylococcopsis, and Gomphosphareria were each represented by one species.

The most prevalent of those species were the Microcystis muscicola, M. grevillei, M. pulverea, Merismopedia tenuissima, M. glauca, Gloeocapsa montana, and G. turgida. They were encountered in almost all types of water bodies, but in particularly large numbers in stagnant and slowly moving shallow streams. Other representatives of this order were encountered rarely and in small quantities.

The blue-green algae which we found in the water bodies of the Upper Racha were unevenly distributed. They were most abundant in various substrates (stones, concrete, iron, wooden, and other objects), substrates soaked by the water of small springs, streams, and waterfalls or submerged in running waters. Meadows and stagnant water bodies turned out to be rather rich in these algae. Twenty-four representatives of the class Cyanophyta were found in them. Lake Shtala turned out to be the richest of all the lakes we examined in which 19 species and forms were detected. A small number (13 species and forms) were found in mineral springs.

We were the first to identify the indicated blue-green algae in the Upper Racha region. Their locations are described in the following manner:

Tetrarcus ilteri Skuja -- in the lake thicket near the Mamisoni pass; Dactylococcopsis rhaphidiodes Hangsg. -- in residues of water plants in the small lake in the Goribolo area near the Gezevtsek pass; Merismopedia glauca (Ehr.) Nägg. -- on rocks near the banks of the Rioni and Zopkhitura rivers, in shallow stagnant and slow-moving streams in the area of the Gebi, Chiora, Saglolo, and Zopkhito villages, and in moss and grass residues in Lake Shtala; M. punctata Meyen -- in the cattle-polluted meadow near the Mamisoni pass and on rocks of the Rioni river branch at the village of Chiora; M. tenuissima Lemm. -- on rocks and in shallow stagnant in slowly moving streams in the area of the villages Saglolo, Chiora, Shmeri and the Shovi and Utsera resorts, in the outlets of the Khari river, and on the bank Lake Kveda; Microcystis grevillei (Hass.) Elenk. emend. -- on wooden and iron objects in the water, in moss and grassy residues, in stagnant water, in a mineral spring, in Lake Shtala, and in the lake thicket at the Mamisoni pass in the region of the villages Pipileti, Shkmeri, and Kveda;

M. Muscicola (Menegh.) Elenk. -- in Lake Shtala and in small lake thickets in the village of Gona and at the Mamisoni pass and in stagnant water in the Shtala region; M. pulverea f. conferta (W. et G. S. West) Elenk. -- on rocks in the mineral spring in the village of Glola; Gloeocapsa dermochroa Näg. -- on rocks soaked by the Khari river and at the river's sources, on the concrete wall under the drinking fountain at the Shovi resort; G. minuta (Kütz.) Hollerb. emend. -- on the concrete wall moistened by the drinking fountain, in moss and water plant residues, in the swamp, in Lake Shtala and in the small lake thickets in the region of the Gona and Chiora villages, the Mamisoni pass, and the Shtala region; Gomphosphaeria lacustris Chod. -- on the Lake Sasvano bank on Mt. Sasvano; Oncobyrsa rivularis (Kütz.) Menegh. -- on rocks in the Khari river outlets; Stigonema ocellatum (Dillw.) Thur. -- in moss residues and grassy plants on the Lake Shtala shore and in stagnant water in the Shtala region; Nostoc paludosum Kütz. -- in the same water bodies and swamp of the that area as well as among mosses of the Chanchakhi river sources; Anabaena lapponica Borge -- in moss residues in the swamp of the Shtala region; A. sp. -- on the concrete wall among the confervoid algae under the drinking fountain, in moss residues and grassy plants, in a cattle-polluted meadow, in a mineral spring, in shallow stagnant ponds, at the Lake Shtala shore, and in a small lake thicket at the Mamisoni pass in the area of the villages Saglolo, Shmeri, the Shovi resort, the city of Oni, and the Mamisoni pass; Tolypothrix tenuis Kütz. -- on stones and wooden objects in a small spring in a mixed forest at the Sakaura river pass; Calothrix brauni Born. et Flach. -- on rocks and iron objects, on a concrete wall moistened by drinking water, in stagnant water near the villages of Gebi, Zudali, and the Shovi resort; S. sp. -- on a wooden conduit under a drinking fountain at Lake Kveda; Oscillatoria brevis (Kütz.) Gom. -- on a concrete wall in a mineral spring, in cattle-contaminated and irrigation fields near the villages of Gebi, Gari, Pipileti, and the Utsera resort; O. limosa Ag. -- on rocks in the mineral spring along the road from the village of Gebi to the village of Gona; O. princeps Vauch. -- on rocks and on the crag under the waterfall in the village of Onchevi; O. pseudogeminata G. Schmid -- on a concrete wall under the mineral spring in the village of Glola; O. tenuis Ag. -- in the mineral water in the village of Pipileti; O. tenuis f. tergestina (Kütz.) Elenk. -- in the mineral spring in the village of Saglolo; O. terebriformis (Ag.) Elenk. emend. -- on rocks and iron objects, and in mineral springs near the villages of Saglolo, Glola, Gurshevi, the Utsera resort, and the city of Oni; O. beggiatoiformis (Grun.) Gom. f. caucasica (Elenk. et Kossinsk.) Kondrat. -- on rocks and concrete objects in mineral springs near the villages of Glola, Gurshevi, and the Utsera resort; Spirulina subtilissima Kütz. -- on rocks in a ditch with shallow running water in the city of Oni; S. sp. -- in a small lake contaminated by a flock of sheep on Mt. Sasvano; Phormidium angustissimum W. et G. S. West -- on rocks in a mineral spring in the village of Glola; Ph. autumnale (Ag.) Gom. -- on moistened rocks, iron and wooden objects, concrete walls, in stagnant and running streams, springs, drinking fountains along the banks of the Rioni, Chveshura, Kvedrula, Garula, Khari, and Dzhdzhora rivers, in an irrigation field, in the Tskhratavistskharo reservoir basin in the city of Kveda, in a small sheep-contaminated lake on

Mt. Sasvano near the villages of Gebi, Chiora, Gona, Kveda, Gari, Shkmeri, Lesora, Zudali, Pipileti, and the Utsera resort, the Gezevtsek pass, the Goribolo and Potskhvrebi areas, the Lake Kveda region, and the Sakaura river pass; Ph. bohneri Schmidle -- on a wooden conduit under a drinking fountain near Lake Kveda; Ph. favosum (Bory) Gom. -- on rocks, a concrete wall, in a small spring, a waterfall, the Tskhratavistskharo reservoir basin in the village of Kveda, and in stagnant shallow water near the villages of Onchevi, Kveda, the Utsera resort and the Sakaura river pass; Ph. foveolarum (Mont.) Gom. -- on the concrete wall of the drinking fountain in the Shovi resort, on rocks in a ditch with shallow running water in the city of Oni; Ph. fragile (Menegh.) Gom. -- in an irrigation field near the village of Pipileti; Ph. frigidum F. E. Fritsch -- in the same place and on a cement wall of the drinking fountain in the Shovi resort; Ph. tenue (Menegh.) Gom. -- on rocks and a mineral spring in the village of Saglolo; Lyngbya nigra Ag. -- on a moistened concrete wall of the Tskhratavistskharo reservoir basin near the village of Kveda; Schizothrix coriacea (KÜtz.) Gom. -- on rocks and wooden objects in a small spring in a mixed forest at the Sakura river pass; Sch. lenormandiana Gom. -- on moistened rocks, a concrete wall, and wooden objects in drinking and mineral springs, in the Chveshura, Rioni, and Khari (sources) rivers, in the area of the villages of Gebi, Shkmeri, and the Utsera resort; Sch. tenuis Woronich. -- in stagnant water at the Shovi resort.

BIBLIOGRAPHY

1. Ivanov, L. A., TRUDY IMP. S.-PETERBURGSKOGO O-VA YESTESVOVANIYA, Vol 33, No 1, 1902.

2. Dzhibladze, T. Ye., "Tez. II Resp. nauch.-metod. konf. biologov vysshikh uchebnykh zavedeniy Gruzinskoy SSR" [Papers of the 2nd Republic Scientific-Methodological Conference of Biologists of the Georgian SSR VUZs], Tbilisi, 1980.

6289
CSO: 1840/445

UDC 582.26

EXCRETION OF PHOTOSENSITIVE ANTIBACTERIAL SUBSTANCES BY WESTELLA BOTRYOIDES ALGAE

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 85 (manuscript received 24 May 83) pp 614-617

[Article by O. A. Sidorova, and I. V. Maksimova, Moscow State University imeni M. V. Lomonosov]

[Abstract] Previous work has demonstrated that the cells of W. botryoides contain substances which take on antibacterial activity when struck by light. This article presents a study to determine whether the antibacterial effect of W. botryoides is related only to the algae cells themselves, or the excretion into the medium of substances which, after activation by light, decompose rapidly. The work was performed in a bacteriologically-pure culture of W. botryoides with a strain of the gram-positive bacteria Bacillus oligonitrophilus in rocking flasks. The method of "dialysis" of cultures was used, allowing a comparison to be drawn between the development of bacteria in the culture of algae and in a medium separated from the algae cells by a semipermeable membrane. In both cases the lag phase of development of the algae resulted in death of the bacteria. However, in the algae culture the population of bacteria was always higher than in dialysis bags. The results indicate that the effect is related to the excretion by the algae cells of substances which increase their antibacterial activity in light. Figures 2; references 3 (Russian).

6508/5915
CSO: 1840/020

UDC 019.941:582.285.2

RUST FUNGI IN FAR EAST

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 19, No 6, Nov-Dec 85 (manuscript received 30 Jun 85) pp 531-532

[Article by I. A. Dudka and Yu. Ya. Tikhonenko, Institute of Botanics imeni N. G. Kholodnyy, UkSSR Academy of Sciences, Kiev, is a review of book: "Locator to Rust Fungi in Soviet Far East" by Z. M. Azbukina, M: NAUKA, 1984, pp 288

[Abstract] This is an important book for mycologists and phytopathologists in the entire USSR, not just those in the Far East. Uredinoflora of the Far

East is rich and many types of rust fungi are found only in that area. The author is an expert in this field. In this locator, characteristics are given for 439 fungi from more than 35 families. The determinations are made on morphological indices of the fungi themselves and include bibliographical references. Overall, the text will be a very useful addition to the literature, assisting many specialists in their work.

7813/5915
CSO: 1840/062

UDC 576.8

EXTREMELY THERMOPHILIC BACTERIA LIVING AT TEMPERATURES OVER 100°C

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian, No 5, Sep-Oct 85 (manuscript received 21 Nov 84) pp 700-714

[Article by L. G. Loginova, Institute of Microbiology, USSR Academy of Sciences, Moscow]

[Abstract] This review of [primarily American] literature discusses recent research in the area of thermophilic bacteria capable of living at temperatures higher than the boiling point of water. New genera and species of archebacteria discovered living at hydrothermal vents on the ocean floor are described. It has been suggested that these bacteria are related to previously-known species only through a common predecessor. In addition to the great theoretical significance of the discovery of bacteria which developed at over 100°C, these bacteria are doubtless of great practical use, due to their capability to metabolize manganese, iron and sulfur, meaning they can be used to leach metals and desulfurize coal. Their formally-stable enzymes can be used in such processes as conversion of starch to fructose or cellulose to ethanol. These microorganisms are expected to be very significant for gene engineering. Figures 11; references 26: 2 Russian, 24 Western.

6508/5915
CSO: 1840/021

UDC 616.94-022.7-036.1(048.8)

NEW TYPE OF WOUND INFECTION AND SEPSIS INDUCED BY MARINE VIBRION V. VULNIFICUS

Moscow ARKHIV PATOLOGII in Russian Vol 47, No 8, Aug 85
(manuscript received 14 Jan 85) pp 89-92

[Article by A. K. Ageyev, Military Medical Academy imeni S. M. Kirov, Leningrad]

[Abstract] A description is presented of a new type of wound infection and sepsis caused by Vibrio vulnificus, observed with increasing frequency since its first description in the USA in 1978. Clinical manifestations and treatment are described. Two major forms are characteristic: wound infection resulting from penetration of sea water into wounds, and sepsis resulting from hematogenous generalization of V. vulnificus from infected wounds or ingestion of raw shellfish infected with the pathogen. The sepsis develops only in persons with severe liver damage and disease accompanied by elevated blood bile content. References 23: 3 Russian, 20 Western.

6508/5915
CSO: 1840/016

UDC 581.1.04

INCREASE IN POTENTIALLY LETHAL PLANT CELL INJURIES CAUSED BY FUSICOCCIN

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 85 (manuscript received 7 Aug 84) pp 528-535

[Article by Ye. I. Melekhov, V. N. Anev and G. S. Muromtsev, All-Union Scientific Research Institute of Chemization of Forest Management, Ivanteyevka, Moscow Oblast. All-Union Scientific Research Institute of Applied Molecular Biology and Genetics, All-Union Institute of Agricultural Sciences imeni Lenin, Moscow]

[Abstract] Recent studies have indicated that metabolism provides the energy and metabolites to support the process of cell injury under stress. A change in the concentration of potassium ions in a cell causes a change in metabolic rate and should change both the rate of damage and the probability of death of a cell. To test this assumption, the transport of K^+ to plant cells was regulated by the use of fusicoccin to stimulate absorption of K^+ by plant cells. The purpose of the study was to determine the significance of K^+ in regulation of the process of cell injury. The data obtained indicated that fusicoccin in regulatory concentrations reinforces the potentially lethal injury to cucumber cotyledon cells treated with 2, 4-D, hot and cold shock. Fusicoccin action was related to its influence on absorption of potassium ions. Figures 3; references 28: 12 Russian, 16 Western.

6508/5915
CSO: 1840/020

UDC 547.96

ROLE OF CELLULAR MEDIATORS (CYTOMEDINS) IN REGULATION OF GENETIC ACTIVITY

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 85 (manuscript received 10 Jan 83) pp 581-587

[Article by V. G. Morozov and V. Kh. Khavinson, Military-Medical Academy imeni S. M. Kirov, Leningrad]

[Abstract] Recent studies indicate direct participation of various subcellular factors in the regulation of genetic activity in higher organisms. The mechanisms of intercellular transfer of specific information in these processes

have not been determined. The authors have previously suggested the existence in multi-celled organisms of a system of peptide mediators, called cytomedins, with a molecular weight of 1,000-10,000, which participate in intercellular regulation of genetic activity. The purpose of this work was a comparative study of the influence of cytomedins isolated from brain tissue and organs of the immune system on the functional activity of lymphoid cells to determine their role in intersystem regulation of various cell populations. Results of a comparative study of the amino acid composition and molecular weight of cytomedins indicate variations among the substances obtained from different locations. Animal studies indicated that some of the substances had clear influence on the intensity of DNA synthesis in the spleen. The effects of the preparations were found to be directed toward different populations of lymphocytes. Exposure of the lymphocytes to cytomedins resulted in a change in the content of cyclic nucleotides. The mechanism of information transfer by means of cytomedins cannot be explained at present, but they apparently have a broad spectrum of biological activity. They seem to participate in the regulation of processes of differentiation as well as proliferation of cells. Further studies of the structure, functional activity and action mechanisms of cytomedins may be quite promising for the solution of the problem of the regulation of genetic activity at various levels in the multi-celled organism. Figure 1; references 25: 17 Russian, 8 Western.

6508/5915
CSO: 1840/020

LEGISLATION ON PREVENTION OF NARCOTIC DRUG ABUSE

Moscow MEDITSINSKAYA GAZETA in Russian 9 Apr 86 p 3

[Article by Yu. Sergeyev, docent, head of a course in Soviet law at the medical institute, Donetsk: "Narcotic Preparations"]

[Text] Drug addiction is comparatively not very widespread in the Soviet Union. Not a single case of heroin or cocaine addiction, or of use of LSD-type narcotics has been recorded in our country during the last decades.

At the same time, the danger of drug addiction is still great. In accordance with the major international legal act--the United Convention on Narcotic Drugs of 1961--the Permanent Committee for the Control of Narcotics under the USSR Ministry of Health has been established and is in operation.

So that narcotic substances may be utilized exclusively for medical (or scientific) purposes, a strict system for handling them was introduced in our country. For example, on 3 July 1968 the USSR Ministry of Health (order No 523) approved rules regulating the procedure of storage, recording, prescription, allocation, and application of toxic, narcotic, and strong-acting medicinal substances. The transportation of these substances in hand luggage and shipment by mail or baggage are prohibited. A special procedure for recording, storing, and allocating them has been established in pharmacies and medical institutions.

When organizing the storage of medicinal substances and articles for medical purposes, it is very important to classify them correctly according to groups. This classification singles out toxic and narcotic medicinal substances of list A, strong-acting substances of list B, and medicinal substances of a general list. In accordance with orders No 523 dated 3 July 1968 and No 1311 dated 30 December 1982 of the USSR Ministry of Health, toxic and narcotic medicinal substances should be stored only in safes or in especially sealed iron cabinets, that is, under conditions ruling out the possibility of their theft.

In accordance with appendices Nos 1 and 2 to the order No 175 dated 25 February 1982 of the USSR Ministry of Health, narcotic medicinal substances for ambulatory patients should be prescribed only on special prescription

forms with the affixation of the stamp and the round seal of the medical institution and of the personal seal of the physician. The prescription for narcotic medicinal substances should be handwritten by the physician signing it. It should also be signed by the chief physician of a general health institution, or its deputy, and only in exceptional cases (in their absence) by a department head. These officials are fully responsible for the correct prescription of narcotic drugs to patients. The forms for the prescription of narcotics have series numbers and are subject to a strict special recording. The prescription is valid only within 5 days. After a narcotic drug is received, the indicated prescriptions are taken away by pharmacies and are subject to storage for 1 year. A violation of the established rules and norms entails disciplinary, administrative, and criminal responsibility.

Soviet criminal legislation establishes increased responsibility for illegal (without a special permission by a competent body) actions with narcotic substances. In accordance with article 224 of the RSFSR Criminal Code the illegal manufacture, purchase, storage, transportation, or shipment for the purpose of sale, as well as illegal sale, of narcotic substances are punished with imprisonment for a period of up to 10 years with or without a confiscation of property.

Both private individuals and officials can be the subjects of the crime under consideration. When criminal acts stipulated by this article are committed with the utilization by an official (for example, the head of a department, a pharmacy, or a pharmaceutical warehouse) of his official position, his actions are qualified on the basis of the crime committed in office and according to article 224.

The ukase of the Presidium of the USSR Supreme Soviet "On Intensifying the Fight Against Drug Addiction" established criminal responsibility not only for illegal actions with narcotic substances for the purpose of selling them, but also for the same actions committed without such a purpose. For example, on the basis of part 3, article 224, of the RSFSR Criminal Code the illegal manufacture, purchase, storage, transportation, or shipment of narcotic substances not for the purpose of sale are punished with imprisonment for a period of up to 3 years, or with correctional labor for a period of up to 2 years. The same actions committed repeatedly are punished with imprisonment for a period of up to 5 years.

Legislation also provides for criminal responsibility for sowing or growing crops (opium poppy and Indian, south Chu and south Manchurian varieties of hemp) containing narcotic substances, whose cultivation is prohibited (article 225 of the RSFSR Criminal Code), for organizing or keeping dens for the use of narcotics (article 226(1) of the RSFSR Criminal Code), and for abetting their use (article 224(2) of the RSFSR Criminal Code). Parents or guardians bear responsibility for the use of narcotic substances by minors without a physician's prescription.

In 1983 in an assize held in the assembly hall of an oblast clinical hospital the people's court tried a criminal case of theft for the purpose of selling narcotic substances on a large scale. Among other participants in the

Medical workers V., S., Kh., K., and L., pursuing mercenary ends, for 2 years, according to a preliminary agreement, created an undetermined reserve of narcotics for their subsequent theft. This was done both through an illegal preliminary deduction of promedol and omnopon and by not crediting the erroneously deducted ampules of narcotics returned by the department's nurses. Furthermore, the theft of narcotic substances was carried out by replacing promedol ampules with ampules from promedol with another strong-acting substance--dimedrol or seduxen--presealed in them in a primitive manner. In the course of the investigation the accused fully admitted their guilt.

The people's court imposed on all the participants in the criminal group criminal punishment in the form of lengthy imprisonment (up to 13 years). An interlocutory order directed at appropriate public health bodies and institutions was rendered.

The USSR Supreme Court made it incumbent upon people's courts, when individuals using narcotics are identified, to report such data to competent public health bodies. On the basis of appropriate orders of the USSR Ministry of Health, general health and pharmaceutical institutions are obliged to report in the established form all cases of initial handling of people suffering from drug addiction to territorial narcological clinics in order to register them and to take appropriate therapeutic measures. Such a situation makes it possible to promptly detect drug addicts at an early stage of the disease and to provide effective therapy.

RECOMMENDED LITERATURE

1. A. P. Gromov, "Prava, obyazannosti i otvetstvennost meditsinskikh rabotnikov [Rights, Duties, and Responsibility of Medical Workers], Moscow, Meditsina, pp 132-135.

2. "Kommentariy k Ugolovnomy kodeksu RSFSR" [Comments on the RSFSR Criminal Code], Moscow, Yurid. lit., 1985, pp 468-473.

3. VEDOMOSTI VERKHOVNOGO SOVETA SSSR, 1963, No 52, p 546.

4. VEDOMOSTI VERKHOVNOGO SOVETA SSSR, 1974, No 18, p 275.

11439
CSO: 1840/1256

UDC 615.218.1.015.4:616.155.25-088.13

EFFECT OF HISTAMINE AND H_1-RECEPTOR BLOCKERS ON PLATELET AGGREGATION INDUCED BY BACTERIAL ENDOTOXIN

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 2, Mar-Apr 86 (manuscript received 23 Jan 85) pp 13-15

[Article by B. Z. Shenkman, Saratov Medical Institute]

[Abstract] Platelet aggregation effect of endotoxins can be modulated and partially retarded by complement, thrombin, ADP, biogenic amines, etc. Effect of histamine and antihistamine preparations on platelet aggregation caused by endotoxin was studied in vitro using rabbit plasma enriched in platelets. It was shown that histamine and dimerol inhibited platelet aggregation under experimental conditions, while pirylamine in high concentrations potentiated the effect of endotoxins averting the effect of histamine. When used in high doses, histamine and dimerol exhibited additive action. Evidently, their effect is realized through the same biochemical channels. Figure 1; references 14: 1 Russian, 13 Western.

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CSO: 1840/039

UDC 615.322:668.535].015.4

PHARMACOLOGY OF PLANT POLYPHENOL EPIGALLOCHIN

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 2, Mar-Apr 86 (manuscript received 17 Oct 84) pp 45-48

[Article by A. G. Kurmukov, M. I. Ayzikov and S. S. Rakhimov, Division of Experimental Cardiology (Director: A. G. Kurmukov), Scientific Research Institute of Cardiology, UzSSR Ministry of Health, Tashkent]

[Abstract] Pharmacologic investigation of epigallochin (I), a polymeric compound, was carried out on mice, rats and guinea pigs. Fluoroglucin, pyrogallol and pyrocatechin are components of I. I was isolated from Rhodiola semenovii Boriss. Starting from a dose of 20 mg/kg, I lowered arterial pressure, decreased the frequency of heart beat and increased cardiac contraction phase; this effect was short lasting, however. I showed a pronounced antihypoxic effect in several different models (normal and hyperbaric hypoxic model,

cytotoxic and hemic models). In isolated guinea pig heart, under hypoxia conditions, this preparation lowered systolic pressure and prevented development of cardiomyocyte contractures at doses ranging from $2 \cdot 10^{-8}$ to $2 \cdot 10^{-6}$ M. Figures 3; references 7 (Russian, 2 by Western authors).

7813/5915
CSO: 1840/039

UDC 616.831-008.934.663-02:615.917:547.262]-02:[615.214.22+615.356:577.164.182

ALCOHOL INTOXICATION AND γ-AMINOBUTYRIC ACID SYSTEM IN BRAIN DURING ACTION OF PANTOGAM AND PHENYBUTE

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 2, Mar-Apr 86 (manuscript received 13 Nov 84) pp 79-82

[Article by I. A. Sytinskiy (Deceased), V. M. Kopelevich, Z. S. Nikitina and L. G. Polevoy, Department of Biochemistry, Leningrad Institute of Physical Culture imeni P. F. Lesgaft]

[Abstract] Effect of alcohol intoxication on locomotive activity parameters of rats and on γ-aminobutyric acid (GABA) system in brain was investigated. Administration of 2 g/kg of alcohol depressed markedly the intensity of locomotion and its vertical component; an increase in the administered dose to 4 g/kg disrupted coordination and led to obvious lethargy of animals. These manifestations correlated with shifts of the GABA system in brain and corresponded to functional changes in the CNS system. Lowering of GABA levels in the brain after alcohol cut off, following extended intoxication with alcohol, is one of the reasons for the development of hyperexcitability of the nervous structures and the convulsive state. Pantogam and phenybute normalized GABA metabolism in the brain and helped to sedate the CNS. The use of GABA derivatives was recommended for compensation of alcohol withdrawal symptoms during treatment of chronic alcoholism. Figure 1; references 18: 10 Russian, 8 Western (2 by Russian authors).

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INFLUENCE OF 3, 12-b-DIMETHYL-OCTAHYDROINDOL-(2,3-a)QUINOLIZINE ON ALCOHOL ADDICTION IN LABORATORY ANIMALS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 4, Jul-Aug 86 (manuscript received 18 May 85) pp 95-97

[Article by M. M. Borisov, T. P. Mufazalova, R. R. Safrazbekyan, E. M. Arzanunts, and R. S. Sukasyan, Scientific Research Institute for Biological Testing of Chemical Compounds, Kupavna, Moscow Oblast; Institute of Precision Organic Chemistry imeni A. L. Mndzhoyan, Yerevan]

[Abstract] Derivatives of β-carboline suppress alcohol motivation and have psychotropic activity. This article presents the results of studies of the antialcohol activity of 3,12-b-Dimethyl-Octahydroindol-(2,3-a)Quinolizine (indoquine) on alcohol addiction in laboratory animals. Indoquine is the most active of a long series of derivatives synthesized at the authors institute, and its effect on the metabolism of 5-oxytriptamine and noradrenaline, as well as the activity of monoaminoxidase in the rat brain are studied. The substance was found to be moderately toxic, LD_{50} for mice 119mg/kg, for rats 57.5mg/kg. At 1/10 LD_{50} it reduced alcohol consumption and water consumption of mice moderately. Increasing the dose from 12 mg/kg (1/10 LD_{50}) to 20 mg/kg resulted in a clear suppression of alcohol addiction, decreasing alcohol consumption while increasing water consumption. In rats, alcohol consumption was not reduced, but water consumption was increased, decreasing alcohol content in the total volume of liquid consumed. Still higher doses resulted in a reduction in alcohol consumption in rats, but appearance of some toxic effects. Indoquine increased the content of 5-OT in the rat brain by 20% three hours after injection at 5 mg/kg, 50% within three hours after administration at 10 mg/kg, but had no significant influence on the level of NA. The antialcohol activity of indoquine is judged to be a result of disruption of equilibrium in the 5-OT and NA system in the brain. References 12: 9 Russian, 3 Western.

6508/5915
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UDC 615.214.076.9

PSYCHOTROPIC EFFECTS OF SOME N-CROWN ETHER DERIVATIVES

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 4, Jul-Aug 86 (manuscript received 22 Apr 85) pp 13-15

[Article by S. E. Timofeyeva, T. A. Voronina, T. L. Karaseva, N. Ya. Golovenko, T. L. Garibova, and N. G. Lukyanenko, Physical Chemistry Institute imeni A. V. Bogatskiy, UkSSR Academy of Sciences, Odessa; Institute of Pharmacology, USSR Academy of Medical Sciences, Moscow]

[Abstract] The purpose of this work was to study the psychotropic effect of acyl derivatives of the crown ethers: N,N'-bis-pyrrolidonomethyl-diaza-18-crown-6 (I), N,N'-bis-succinylimidomethyl-diaza-18-crown-6 (II) and N,N'-bis-γ-aminobutyryl-diaza-18-crown-6 (III). Experiments were performed on male white mice and rats. The anticonvulsive effect of the compounds was studied by their antagonism to the convulsive effect of corazol [pentylenetetrazol], thiosemicarbazide, strichnine and hyperkinesis evoked by arecoline. The crown ethers studied were administered intraperitoneally in saline solution at 50-200 mg/kg. The crown ether derivatives were found to have a broad spectrum of anticonvulsive activity, and antiaggressive and tranquilizing effect, but no sedative or myorelaxant effect. The derivatives were similar in spectrum of psychotropic activity to the atypical tranquilizers, but had higher toxicity. Figures 2; references 6: 2 Russian, 4 Western.

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UDC 615.243.6.015.4:612.826.018:577.175.52

INFLUENCE OF DIMETPRAMIDE AND METOCLOPRAMIDE ON CATECHOLAMINE TURNOVER RATES IN RAT BRAIN SUBCORTICAL-BRAINSTEM STRUCTURES

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 4, Jul-Aug 86 (manuscript received 30 Oct 85) pp 25-27

[Article by V. I. Legeza, M. F. Kamynina, I. V. Markovskaya, M. G. Shagoyan and K. S. Martirosov, Military-Medical Academy imeni S. M. Kirov, Leningrad]

[Abstract] Dimetpramide, a new Soviet antiemetic, has a blocking effect on the dopamine receptors in the vomiting center. The present paper reports studies of the influence of dimetpramide on the catecholaminergic receptors of the subcortical-stem structures of the brain which regulate behavior activity. The dopamine- and adrenoblocking effect of dimetpramide was evaluated based on its influence on the catecholamine turnover (synthesis and breakdown) rate. Metoclopramide was used as a comparison substance. Dimetpramine was found to cause, in the rats, biochemical changes resulting from blockage of the catecholaminergic receptors in significantly higher doses than metoclopramide. References 14: 4 Russian, 10 Western.

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CSO: 1840/043

UDC 615.217.34.015.4:[612.332.8.015.1:577.152.421-06:613.863

INFLUENCE OF AMIZYL ON CARBOHYDRASE ACTIVITY IN INTACT AND STRESSED ANIMALS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 4, Jul-Aug 86 (manuscript received 24 Sep 85) pp 28-31

[Article by U. B. Zakirov, B. Sh. Shaislamov and D. Ya. Teshabayev, Department of Pharmacology, headed by Docent M. M. Azimov, Tashkent Medical Institute]

[Abstract] Stress has a significant influence on various gastrointestinal functions, requiring a search for effective means to prevent or eliminate the negative effects of stress. The purpose of this work was to study the influence of the central cholinolytic amizyl on the activity of digestive enzymes participating in the hydrolysis of carbohydrates in intact and stressed animals. Experiments were performed on rats of both sexes; the preparation was administered perorally at 1, 3 and 10 mg/kg in a single dose, or over the long term at 3 mg/kg. Stress was evoked by forced immobilization. Results were statistically processed. One-time administration of amizyl was found to decrease the activity of pancreatic α-amylase, enteral γ-amylase and saccharase for one day after administration. Long term administration of amizyl first decreases pancreatic α-amylase and enteral γ-amylase activity, then it returns to the initial level after several weeks in spite of continued administration. Saccharase activity first increases slightly, then decreases to the control level. Amizyl decreases the activity of α and γ amylases only in concentrations significantly exceeding those encountered in the small intestine after oral administration. Administered before immobilization, it significantly reduces the changes observed otherwise in the carbohydrase spectrum. Figure 1; references 19: 17 Russian, 2 Western.

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UDC 615.246.9.034

KINETICS OF EXCRETION OF MEMBRANE-ACTIVE MACROHETEROCYCLE IN MICE

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 4, Jul-Aug 86 (manuscript received 5 Feb 85) pp 64-67

[Article by Ye. K. Plotnikova, N. Ya. Golovenko, V. G. Zinkovskiy, N. G. Lukyanenko, O. V. Zhuk, and S. S. Basok, Department of Physical and Chemical Pharmacology, headed by Doctor of Biological Sciences N. Ya. Golovenko, Department of Bioorganic Chemistry, headed by Doctor of Chemical Sciences N. G. Lukyanenko, Physical Chemistry Institute imeni A. V. Bogatskiy, UkSSR Academy of Sciences, Odessa]

[Abstract] Polyfunctional macroheterocycles have immunomodulating properties with preferential stimulation of cell reactions, manifested as anticonvulsive activity with anxiolytic and antihypoxic effects plus nootropic effect. This

article studies the nature of excretion of polyfunctional macroheterocycles from experimental animals using N-(^{3}H-aminoacetyl)-1-aza-4,7,10,13-tetraoxacyclopentadecane chlorohydrate (I). Experiments were performed upon male white mice which received (I) at 100 mg/kg interperitonally in an aqueous-alcohol solution. Urine and feces were collected for four days. It was found that (I) undergoes intensive biotransformation, forming chloroform-extractable and water-soluble metabolites. Some 90% of the dose is excreted with the urine, with a characteristic integral curve as a function of time. Figures 3; references 7 (Russian).

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INFLUENCE OF ENOMELANIN ON RED CELL HEMOLYSIS INDUCED BY FREE RADICAL REACTIONS AND OTHER FACTORS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 4, Jul-Aug 86 (manuscript received 9 Apr 85) pp 89-91

[Article by I. Ye. Kovalev, N. P. Danilova, S. A. Andronati and Yu. L. Zherebin, Department of Xenobiology and Immunochemistry, headed by Professor I. Ye. Kovalev, Scientific Research Institute for Biological Testing of Chemical Compounds, Kupavna, Moscow Oblast; Physical Chemistry Institute imeni A. V. Bogatskiy, UkSSR Academy of Sciences, Odessa]

[Abstract] Melanins, stable radicals, act as traps for short lived free radicals and have a radioprotective effect, inhibiting peroxide oxidation of lipids. This work studies the influence of enomelanin from grape skins on hemolysis of erythrocytes induced by photoactivated chlorpromazine and Fenton's reagent, and also on immune and osmotic hemolysis. The degree of hemolysis was measured in a 1% suspension of washed, sheep red blood cells based on absorption of the fluid above the sediment at 420nm. The effect of enomelanin on hemolysis was estimated as a percent with respect to absorption in a control which received no melanin. Enomelanin significantly reduced hemolysis induced by photoactivated chlorpromazine, Fenton's reagent and antierythrocyte antibodies, but had no influence on osmotic hemolysis. Thus, it protects the erythrocytes from hemolysis resulting from induction of free radical processes and inhibits hemolysis induced by photoactivated chlorpromazine. Immune hemolysis is also inhibited. Figure 1; references 8: 3 Russian, 5 Western.

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UDC 581.3.144.195

INFLUENCE OF GROWTH STIMULATING AND BLOCKING CONCENTRATIONS OF ORGANOPHOSPHORUS PESTICIDES ON HYDROBIONTS

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 85 (manuscript received 23 Jun 82) pp 607-612

[Article by L. M. Apasheva, K. D. Poltorak, S. I. Ptitsyna and V. A. Shevchenko, Institute of Chemical Physics, USSR Academy of Sciences; Institute of General Genetics, USSR Academy of Sciences, Moscow]

[Abstract] An attempt is made to estimate the influence of toxic organophosphorus pesticides which both block and stimulate the division of cells of higher and lower plants. Two strains of Chlorella vulgaris B and a culture of Elodeacanadensis R were exposed to carbophos and rogor at 10.0 to 0.0001 mg/l, introduced once to the culture fluid. Both of these compounds are mutagens for the plants studied. Their lethal toxic effect is apparently related to irreversible damage to the photosynthetic system. The pesticides were found to be dangerous over a broad range of concentrations, causing death and blockage of division of cells at high concentrations, stimulation of cell division at low concentrations, leading to disruption of the ecological balance. Figures 4; references 7 (Russian).

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EXPERIMENTAL EVIDENCE OF REVERBERATION IN CENTRAL NERVOUS SYSTEM

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 5, Apr 86 (manuscript received 4 Nov 85) pp 1262-1265

[Article by G. A. Vartanyan, A. A. Pirogov and V. V. Shabayev, Scientific Research Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad]

[Abstract] Cyclic neuron networks postulated by L. de No have been viewed as structural bases for short term memory processes represented as circulatory (reverberating) excitation along closed neuron loops lasting a specific time period after some excitation. This hypothesis has not been adequately verified by experimental work and many workers questioned the existence of reverberations in the CNS. Using previously described methodology, experiments were performed on dogs in an attempt to verify this question. The functional relationship between neurons was viewed in three stages: 1) direct unilateral relationship between cells, 2) appearance of new reverberational relationship during sudden changes of experimental program and 3) disappearance of these functions and transition to new interactions through polysynaptic chains. It was concluded that closed circulation of excitations does occur in neuron loops during activation of short term memory. Figures 2; references 11: 7 Russian, 4 Western.

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UDC 612.822.3

RELATIONSHIP AMONG VARIOUS BIOELECTRIC ACTIVITY BANDS IN HUMAN BRAIN

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 6, Apr 86 (manuscript received 12 Feb 85) pp 1509-1512

[Article by S. V. Medvedev and M. A. Belov, Scientific Research Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad; Leningrad Scientific Research Computer Center, USSR Academy of Sciences; Interdepartmental Scientific Council on the Consciousness Problem, Moscow]

[Abstract] A combination of psychological testing and electrophysiological monitoring on two Parkinsonism patients was employed to assess significant interrelationships among bioelectric activity bands of the human brain. The

electrophysiological component consisted of long-term semimicroelectrodes implanted in various brain structures in patients with unaffected mentation, and computer-based analysis of peristimular histograms of the flow frequency of neuronal activity. A definite interrelationship was found to bind the tau wave, the 0.1 to 4 Hz band, and the frequency flow pattern. Waves(s) in the 0.1 to 4 Hz frequency band appear to constitute a special, but nonspecific with respect to brain structure, reflection of the significance of a stimulus that may involve a given neuronal subpopulation in a response if that subpopulation is normally involved in that type of activity. Figures 2; references 7 (Russian).

12172/5915
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FINANCING IMPROVEMENT OF RURAL HEALTH CARE

Moscow IZVESTIYA in Russian 14 Aug 86 p 3

[Article by S. Tsikora: "A Cause and Money" under the rubric "Follow-in the Footsteps of an Advanced Experiment"]

[Text] The events that made me arrange for a meeting with the minister developed as follows. The publication of the article "Physicians and Financiers" (Izvestiya Nos. 156, 157, 158) caused an unexpected response. The financiers, who supposedly could have argued with the paper, responded to the article with understanding and a truly public interest. However, the physicians surprised us. As persons, most interested in a positive solution of the stated problem, they unfortunately took the position of detached onlookers. By virtue of performing their official duties they cannot in any way be detached onlookers in this problem, for the subject concerns one of the most critical social problems--improvement of medical care provided to the rural population and reinforcement of the material-technical base of public health care in the villages.

The paper suggested one of the feasible variants for solving the problem by following the experiment of the Vinnitsians [people of Vinnitsa Oblast]. It turned out that additional funds for public health care are not so difficult to find when there is a will. Kolkhozes and enterprises are ready to contribute to a sector, which is capable of preserving the health of healthy persons and restoring the ability to work to the sick. It is not so easy for physicians to work at such a qualitatively higher level. But, the Vinnitsians also remedied this situation by introducing new forms of medical care organization to the population.

The experiment was to secure capital for a sector. How did its staff --the USSR Ministry of Health--deal with this? First Deputy Minister O. Shchepin in his reply to the editor completely avoided an evaluation of this experiment, as if he had not noticed it. And, in the constructive part of his reply, not knowing what to say, in the name of the ministry he quoted the clarification of the USSR Gosbank that was sent locally after the article appeared in "Izvestiya". This clarification removed all obstacles standing in the way of

attracting the funds of kolkhozes and enterprises for the needs of health care, however, its citing here led to the question, by no means an idle one: what does the USSR Ministry of Health have to do with this?

Who should have been the first to be concerned about finding new ways of reinforcing the material-technical base of rural health care and about presenting proposals to the appropriate organizations? Of course, it should have been the USSR Ministry of Health! This is within the scope of its everyday concerns and direct service duties, it is the very work that should be done today. But, this work was done by others.

In such a situation, a talk with the minister cannot be avoided. The subject of our conversation defined the special feature of the modern sociodemographic situation in villages. The flow of young people from the villages and the aging of the people in the villages have significantly increased the value of working hands. Physicians are faced with a qualitatively new problem--not simply "to fix up" the sick, but to work at the highest level of medicine's potentialities: prevent disease, and if it has come--not allow a person to lose his ability to work.

The USSR Minister of Health Sergey Petrovich Burenkov did not agree with such an evaluation of the situation in the villages. Then, it was time to ask the question: how should this problem be solved?

"As we see the situation, the quality of medical care in the villages can be improved by priority development of medical clinics, district hospitals, visiting brigades of specialists from the institutes, and further development of central rayon hospitals. A rural clinic enables people in the villages to use medical care. The district hospital enables..."

I have cut short here what S. P. Burenkov had to say because his explanation repeated exactly the text of the first deputy minister's reply to the editor. I can conceive of the minister missing the article in the paper, but a person who affixes his signature to a reply to the editor has to read the reply very carefully. In the article the position of the paper was clearly and simply formulated: to provide quality medical care at a level, at which it will preserve the health of the healthy and will restore the ability to work to the sick; and, this is feasible in a rural area only through a central rayon hospital. It was precisely this top priority allocation of funds for the development of central rayon hospitals and only after that for medical clinics, district hospitals, and midwifery centers that enabled the Vinnitsians to improve their operations by the most objective criteria in public health--population death rate, temporary disability rate, and permanent disability rate. The Vinnitsians not only reduced the losses related to temporary disability by half (!), but were able to set up medical

services in such a way that the kolkhozes can be guaranteed that the machine operators will be at the "peak of health" at the busiest times for a village--planting and harvesting.

"Does the USSR Ministry of Health have another solution for the problem of organizing medical care in rural areas on the same qualitative level?"

"Only the central rayon hospitals can provide highly skilled medical care," said the minister. But, I do not object to the work quality of the medical clinics, district hospitals and midwifery centers."

And, we do not object. One cannot do without district hospitals in mountainous areas and in regions without roads. There they are not simply needed, but are indispensable.

In the article "Physicians and Financiers" we were talking about something else. The question of the basic principle for developing rural health care at this time was discussed. In our opinion (which is supported by the already available experiment) only the central rayon hospitals, whose capacity permits them to dispense for all the population, to treat the sick, and to have an up-to-date rehabilitation service, can provide medical care of the required quality. So far, we have not been spoiling the peasants with highly skilled medical care. The problem of drastically improving rural health care may be considered to be formulated, but it is still far from solved. What is missing? Primarily, a clear-cut position on the part of the USSR Ministry of Health. After all, it is the one that finally determines what is to be built and how the medical services are organized in villages whose situation has changed.

In response to this, the minister said:

"I have to apologize in the name of the ministry for the formal reply to the article in the paper. We plan to examine the experimental work of the Vinnitsians at a board meeting in October."

We will wait until fall.

And, we wish to inform those, who do not intend to wait until fall and are ready to start reorganization immediately, that their undertakings are supported by the respective replies of the Ministry of Finance and USSR Gosbank to the article in "Izvestiya".

Here, are some excerpts from these replies. Deputy Chairman of the USSR State Bank Administration V. Arkhipov informed the editor that: "The USSR Gosbank, guided by the decree of the CPSU Central Committee and the USSR Council of Ministers dated 20 March 1986 "On the Further Improvement of the Economic Mechanism of Management in the Agro-Industrial Complex of the Country", locally sent directives, in which it is permitted to finance kolkhozes, sovkhozes and other

enterprises in rural areas for shared participation in installing medical and sanitation projects with pooling of farm capital for the construction of these projects and the public services and amenities, as well as for the purchase of essential medications."

Deputy Minister of USSR Finance N. Garetovskiy wrote in "Izvestiya": "At this time, in accordance with the instructions of the directive bodies, an extensive complex of measures for improving the medical care of the population, including the rural population, is being worked out. Provisions have been made to allow production associations, enterprises and the organizations of industry, farming, transport,communications, trade and other sectors of the national economy to send 1.5 percent of the funds, designated for stimulation of the economy, to ensure measures for improving in the public health institutions the nutritional expenditure standards, the purchasing of medications and dressing supplies, the soft inventory and the financing of other measures for the further development of public health care. This will affect the health care institutions in cities and villages. Proposals have been presented to the USSR Council of Ministers on all these problems."

This means that the reorganization of health care in the villages already has not only a beginning, but prospects for the future as well.

12525
CSO:1840/1289

ALCOHOLISM TREATED WITH ACUPUNCTURE

Moscow TRUD in Russian 18 Jul 86 p 4

[Article by A. Abakumov under the "Medicine and Life" rubric: "Toward Sobriety Without Medication"]

[Text] A new method has been developed for treating alcoholism with the help of reflex therapy. Engineer F., a recent graduate of a Moscow higher educational institution, drowned himself in waves of alcohol for more than two months. He was delivered to the Central Scientific Research Institute of Reflex Therapy with a disturbed psyche and physical health as a consequence of his hard drinking.

Alas, I had already seen such patients a number of times in drug clinics. Before starting any treatment for alcoholism, they need to get their human appearance back to normal by means of the most potent drugs, physiotherapeutic procedures, multi-vitamin supplements....

But in F.'s case, a different means was used: reflex therapy. He was placed on a couch and small steel needles were introduced into specific centers of his helixes, wrists and feet. He very soon fell asleep--for the first time in many weeks peacefully, without nightmares....

Reflex therapy, that is treatment by actions on particular, biologically active points of the body, is being successfully applied today in the battle with many serious illnesses: radiculitis, various kinds of arthritis, bronchial asthma, ischemia of the heart....And now a new opponent--alcoholism.

"It is well known that through mimicry, the working of the arms and legs is controlled by extensive areas of the brain which respond simultaneously to our acquired habits--both good and bad," relates V. Kokhanov, the head of the alcoholism laboratory and a candidate of medical sciences. The idea arose: might it be possible to stimulate these areas in such a way as to start up the regulating mechanisms of the central nervous system "turned off" by alcoholism? Through experimentation we succeeded in finding an effective combination of needle pricks that removes the abstinent alcoholic syndrome in a few sessions.

The first steps have been made: the training of doctors at base clinics of the Central Scientific Research Institute of Reflex Therapy has begun, and the USSR Ministry of Health has issued a directive to all drug centers to set up the instruments needed for these needle pricks and for electro-acupuncture....

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REGULATION OF ELECTROTONIC SYNAPSE CONDUCTIVITY BETWEEN NEURONS OF POND SNAIL BY ACTH MOLECULE ACTIVE CENTER FRAGMENTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 287, No 5, Apr 86 (manuscript received 21 Aug 85) pp 1266-1269

[Article by A. G. Kamkin, I. S. Kiseleva, G. V. Kushnareva, G. I. Kositskiy, M. A. Ponomareva-Stepnaya and V. N. Nezavibatko, Second Moscow State Medical Institute imeni N. I. Pirogov, Institute of Molecular Genetics, USSR Academy of Sciences, Moscow]

[Abstract] Intercellular electrotonic interaction may be involved in the functions of electrostimulated tissues of the nervous system. Recent data indicate that neuropeptides may be the regulators of some of these organism functions. Regulation of the conductivity of electrotonic synapse by ACTH fragments was studied on mollusks which possess monosynaptic electrotonic bonds between the neurons. The $ACTH_{4-10}$ fragment led to changed conductivity of the electrotonic synapse, the fragment $ACTH_{5-10}$ resulted in bilateral decrease of the electrotonic conductivity synapse with appearance of partial corrective properties. The control experiment based on a mixture of free amino acids led to straightening out properties. In all, it was shown that the active neuropeptides may alter the effectiveness of electrotonic synaptic conductivity in mollusks in a directed and stable way. Figure 1; references 7: 3 Russian (1 by Western authors), 4 Western.

7813/5915
CSO: 1840/453

DEFICIENCIES IN POLIO TREATMENT

Moscow LITERATURNAYA GAZETA in Russian 17 Sep 86 p 13

[Article by A. Galayeva: "Absurdity"]

[Abstract] A strong case is made for the therapeutic procedure for polio victims developed by Yuriy Borisovich Ginzburg. The procedure itself is not described. Over a thousand patients were evidently treated successfully by

this physician. He appears to be the only individual performing this miraculous operation in all of the USSR. His capacity is 45 beds available to him only from May through October months each year. The rest of the time these beds are used for acute trauma cases (which often translates: alcoholics). In light of the fact that there are 198 Departments of Orthopedics in the USSR, the apparent lack of support to Ginzburg is viewed as a sorry state of affairs.

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CSO: 1840/057

COMPLICATIONS FROM NONSTERILE INJECTION NEEDLES

Moscow LITERATURNAYA GAZETA in Russian 3 Sep 86 p 11

[Article by A.Galayeva "'Punctures' with Injections"]

[Abstract] Increasing incidents of inflammatory complications at injection sites led the author to investigate the possible causes for this anomaly. Medical staff suggested several possible reasons: decreased immunity of individuals, increased pathogenicity of the microbes, etc. A strong suggestion was made by the author that the real cause is improper sterilization of the instruments or the injection site, and possible repeated use of the same needle. This article made a strong point for the use of disposable syringes which evidently were being produced in the past but are now unavailable.

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UDC 577.391

CONTRIBUTIONS OF ANTIOXIDANTS AND ENDOGENOUS THIOLS TO RADIORESISTANCE

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 85 (manuscript received 29 Apr 83) pp 588-593

[Article by Ye. B. Burlakova, G. F. Ivanenko and L. N. Shishkina, Institute of Chemical Physics, USSR Academy of Sciences]

[Abstract] A study is reported of the role of endogenous thiols and antioxidant activity of lipids in determining the resistance of biological objects to radiation. The correlation between initial values of antioxidant activity of lipids or the level of sulfhydryl groups in the organism and the radioresistance of animals of various species and lines at various levels of radiation exposure was studied. The work was performed on mice, of various lines, hamsters and guinea pigs. The data indicate that at low radiation doses, the radioresistance of the animals correlates with high antioxidant activity of lipids and possibly with high levels of nonprotein sulfhydryl groups, whereas at lethal doses radioresistance correlates with a high level of total (protein) sulfhydryl groups. Two suggestions are made: there are either two critical targets within the cell for radiation (perhaps DNA and the cell membrane), or DNA is the only critical target, the membrane supporting DNA repair after radiation. Further studies will be required to choose between these two possibilities. Figure 1; references 21: 13 Russian, 8 Western.

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MULTIVARIATE STATISTICAL ANALYSIS OF TISSUE BASOPHILS IN ACUTE RADIATION SICKNESS

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 1, Jan 86 (manuscript received 14 Mar 85) pp 69-72

[Article by A. V. Datsenko, V. V. Shikhodyrov and V. A. Kornelyuk, Institute of Biophysics, USSR Ministry of Health, Moscow]

[Abstract] An approximate estimate is given of the changes in morphometric parameters of tissue basophils by means of multivariate analysis for the bone

marrow, intestinal and cerebral forms of acute radiation sickness. Experimental studies were performed on 170 wistar rats of both sexes 2 to 4 months of age following irradiation at 6, 15-30 or 300 Gr. The animals were sacrificed after 0.5, 3 and 6 hours, 1, 3, 6, 8 and 12 days following 6 Gr, 5 and 30 minutes, 1, 3, 6, 24, 48 and 72 hours following 30 Gr and 5 and 30 minutes, 1, 3, 6 and 18 hours following irradiation at 300 Gr. The cells in the mesentery were studied after staining with an alcohol solution of toluidine blue. The diameter and number of cells in the field of vision of a microscope were determined, as well as the distance between the cells. Integral indexes of labrocyte status were calculated. The 6 Gr dose was found to cause changes in the structure of tissue basophils during the first few hours after irradiation. The higher doses yielded significant structural changes, occurring earlier with higher doses. The computed integral indexes correlated well. References 7 (Russian).

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CONFERENCES

UDC 061.3.577.23

SECOND ALL-UNION SYMPOSIUM ON TECHNICAL BIOENERGETICS

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 4 Dec 85) pp 137-139)

[Article by S. Kh. Tapaltsyan and V. Ye. Nikitina]

[Abstract] The Second All-Union Symposium on "Technical Bioenergetics" was held Sep 17 to 19, 1985 on the Chardym Island on Volga River. It was organized by the Institute of Biochemistry imeni A. N. Bakh, USSR Academy of Sciences and the Institute of Biochemistry and Physiology of Plants and Microorganisms, USSR Academy of Sciences. The main theme was bioconversion of solar energy and of the biomass into fuel, fertilizers and other valuable products. Attendance was about 100. Ye. S. Pantskhava presented an overview of the problem; noting that environmental protection is closely connected with the problem of current energetics. He stated that the USSR has great potential to develop bioenergetics. One of the immediate tasks is the search for, selection and isolation of new strains of thermophilic anerobic bacteria suitable for these processes. A series of papers covered the use of immobilized microbial cells in methane fermentation and in production of hydrogen. An interesting paper was presented by N. P. Lvov on ecological consequences of the use of nitrites and nitrates. A number of papers addressed various facets of methane formation. Ten Khak Mun advocated processing sea weeds which pollute the shores, using them as one possible source of new products. Considerable interest was evoked by papers devoted to processing of various types of manure from animal farms into gas and fertilizer. Construction of models and pilot plants was discussed thoroughly. It was concluded that substantial progress has been made in the area of technical bioenergetics in the USSR.

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COORDINATION SYMPOSIUM ON GENETIC ENGINEERING OF CELLULASES

Moscow BIOTEKHNOLOGIYA in Russian No 1, Jan-Feb 86
(manuscript received 9 Dec 85) pp 139-141

[Article by I. O. Gordon and N. N. Zhuze]

[Abstract] This symposium, held in Riga during late November and early December 1985, dealt with planning research directions for the genetic engineering development of microbial producers of cellulases. Representatives of the following organizations participated; Institute of Biochemistry imeni A. N. Bakh, Institute of Molecular Genetics, Moscow State University, Institute of Biochemistry and Physiology of Microorganisms and Institute of Microbiology imeni A. Kirkhenshteyn. The symposium could be divided into three parts: analysis of current state of biotechnology, achievements and potentials in the area of cloning genetic material in various microorganisms and determination of concrete tasks emanating from this symposium. One of the principal tasks is the search for microbial cellulolytic complexes with high molecular activity and adsorptive ability which can be achieved by proper screening. In addition to molecular activity, these cellulase complexes should be thermostable and have long-lasting potential. Achievements in the area of cloning of heterologous cellulase genes were reported. Future developments in this area are expected to include studies of the composition and physical-chemical properties of cellulase complexes, development of rapid screening methods, cloning of cellulase genes, genetic studies of Clostridium, development of immune analytic methods for the components of native cellulase complexes and others.

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MISCELLANEOUS

NEWSPAPER'S CRITICISM OF LAB ANSWERED

Frunze SOVETSKAYA KIRGIZIYA in Russian 16 Jul 86 p 2

[Article by V. Yakovlev, vice president, academician of the Kirghiz SSR Academy of Sciences under the "Effectiveness of Statements of Soviet Kirgiziya" rubric: "In Revenge for Criticism?"]

[Text] This is a report by the Kirghiz SSR Academy of Sciences on the verification of the remark "In Revenge for Criticism?" which was published in the newspaper SOVETSKAYA KIRGIZIYA for February 22, 1986.

The verification has established that the scientific research topics of the biotechnique laboratory (headed by L. F. Romasheva, doctor of biological sciences) are important for the national economy. For the purpose of using "Kirghiz Ectoparazitin" in the republic's industries, the preparation was subjected to testing in scientific production. At present the manufacture and testing of the preparation has been stopped because of the absence of the technical documentation needed to make and introduce it, which is a serious shortcoming in the biotechnique laboratory's work.

The remark "In Revenge for Criticism?" contains certain inaccuracies. An order was issued to the Institute of Biology to combine the laboratory, but not to close it. The head and her co-workers have not been dismissed and have not been assigned to other departments, but continue their work. The notice in the newspaper appeared as a consequence of an insufficiently based order of the institute's administration on combining the laboratory of parasitology, biotechnique, and helminthology, the action of which was subsequently halted temporarily.

The results of the verification were examined at a meeting of the bureau of the chemical-engineering and biological sciences division, where a decree was passed: M. M. Tokobayev, the director of the Institute of Biology and corresponding member of the Kirghiz SSR Academy of Sciences, was reprimanded for violations allowed in solving certain problems. It was proposed to him that, with the institute's switch to new terms for paying for labor, he strictly adhere to the proper documents of the CPSU CP, the USSR and All-Union Central Trade Union Council of Ministers, the USSR Academy of Sciences presidium, and the presidium of the Kirghiz SSR Academy of Sciences in this regard.

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BIODETERIORATION IN INDUSTRY

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 19, No 6, Nov-Dec 85 (manuscript received 11 Jul 85) pp 532-533

[Article by Yu. P. Nyuksha, State Public Library imeni M. Ye. Saltykov-Shchedrin, Leningrad is review of title book "Biodeterioration in Industry": Intercollegiate Collection. Gorki: Published by GSU, 1983 pp 100: Illustrations, Tables]

[Abstract] Gorki State University imeni A. L. Lobachevskiy is one of the leading institutes in studies of biodeterioration and means of its control. This collection contains 16 papers by various authors on a variety of topics from control measures to general theoretical material, reviews and experimental data. Six publications reported on the use of biocides to protect various materials. The publication appears to be timely and desirable. More such works should be published.

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REACTION OF PLANKTONIC ALGAE (BACILLARIOPHYTA AND PYRROPHYTA) TO WATER FROM DEOXYGENATED ZONE OF THE BLACK SEA

Kiev DOKLADY AKADEMII NAUK UKRAINSKOY SSR: SERIYA B: GEOLOGICHESKIYE, KHIMISHESKIYE I BIOLOGICHESKIYE NAUKI in Russian No 8, Aug 86 (manuscript received 3 Apr 86) pp 73-75

[Article by Corresponding Member of the Ukrainian Academy of Sciences G. G. Polikarpov, G. Ye. Lazorenko and L. A. Lanskaya, Institute of Biology of the Southern Seas, Ukrainian Academy of Sciences, Sevastopol]

[Abstract] The purpose of this article was to compare the effects of two media on the status of cultures of single-celled algae. The media studied were an artificial Goldberg medium and a natural medium consisting of oxidized water from the deoxygenated zone at 1,000 m depth. The data provided a clear

picture of the ecologic significance of the deoxygenated zone of the Black Sea through the eutrophic influence of this medium on biological processes occurring in the deoxygenated zone and the zone above it. The experiments confirmed the possibility of using deep Black Sea water for aquaculture of phytoplankton. The rate of division and population of diatoms and pyrophytic algae in the exponential growth phase were both higher in oxygenated water from the deoxygenated zone than in Goldberg's culture fluid. Figures 2; references 9: 8 Russian, 1 Western.

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ELECTRON DIAGNOSTIC MICROSCOPE

Ashkhabad TURKMENSKAYA ISKRA in Russian 22 Jul 86 p 3

[Article by K. Dzhunelova, correspondent of Turkmenskaya Iskra: "Secrets of a Living Cell"]

[Abstract] The correspondent reported on her impressions obtained during a visit to the Laboratory of Microbiology at the Central Scientific Research Laboratory of the Turkmen Medical Institute, especially concerning the great potential of electron microscopy in studies at cellular level of the living organisms. This instrument is capable of enlarging subcellular structures 4.5 million fold; it can be used to study disease mechanisms, viral problems and interactions at the level of microorganisms. The laboratory is the first of its kind in the Turkmen SSR.

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