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# USSR Report

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USSR REPORT  
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UDC 612.53-07

SPECIFICS OF HUMAN THERMAL REGULATORY REACTIONS UPON EXPOSURE TO CORIOLIS ACCELERATION

Kiev ZHURNAL USHNYKH, NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 5, Sep-Oct 84 (manuscript received 2 Aug 83) pp 9-15

PLEPIS, O. Ya. and GLAZNIKOV, L. A., Otorinolaryncology Department (headed by professor Yu, K. Revskoy), Military-Medical Order of Lenin Red Banner Academy imeni S. M. Kirov

[Abstract] This work is dedicated to determination of quantitative formulas for control of thermoregulatory vascular reactions in human skin in the area of the forehead upon exposure to coriolis forces. A method of continuous accumulation of coriolis forces was used with the subject seated on a rotating chair. Skin temperature dynamics were recorded as a vestibular autonomic reaction. A high and direct variation was determined between skin temperature reaction and time of tolerance of the subjects. The mathematical calculations of the dynamics of the temperature reaction of the skin upon exposure to stimulative coriolis forces, parabolic after movement stops.

Figures 2, references 17: 11 Russian, 6 Western.

[1014-6508]

GROWTH AND BIOSYNTHETIC ACTIVITY OF NIGHTSHADE CELLS IN MIXED CULTURES  
WITH NITROGEN-FIXING CYANOBACTERIA

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 279, No 1, Nov 84  
(manuscript received 26 Apr 84) pp 253-256

GORELOVA, O. A., RZHERZHABEK\*, Y. (RERABEK, J.), KORZHENEVSKAYA, T. G.,  
BUTENKO, R. G., corresponding member, USSR Academy of Sciences, and  
GUSEV, M. V., Moscow State University imeni M. V. Lomonosov;  
\*Institute of Microbiology, Czechoslovak Academy of Sciences, Prague

[Abstract] Studies were conducted on the growth rate and biosynthetic activities of nightshade cells (*Solanum laciniatum*) in mixed suspension culture with nitrogen-fixing cyanobacteria. Cultivation of *S. laciniatum* with *Anabaena variabilis* under conditions of illumination in nitrogen-free medium led to a 28-30% greater plant cell yield than seen in the plant monoculture. Cultivation of the nightshade cells with *Chlorogloea fritschii* in the dark on nitrogen-free media resulted in the accumulation of twice as many plant cells after 10 days as obtained in the plant monoculture. In addition, under certain conditions plant production of glycoalkaloids was increased by 89%, although steroid biosynthesis was not affected. The effects of the cyanobacteria in increasing plant cell yields, and selective enhancement of biosynthetic activity, can either be ascribed to factors actively secreted into the medium or released upon cyanobacterial lysis. Although the nature of such metabolites has not been ascertained, it appears safe to assume that they are nitrogenous in nature. Figures 1; references 11: 1 Czech, 4 Russian, 6 Western.  
[1615-12172]

ROLE OF RNA SYNTHESIS IN HYPERSENSITIVE REACTION OF RYE INFECTED WITH STEM BLIGHT PATHOGEN

Minsk DOKLADY AKADEMII NAUK BSSR in Russian Vol 28, No 12, Dec 84  
(manuscript received 15 Mar 84) pp 1123-1126

DOROZHKIN, N. A., Academician, BSSR Academy of Sciences, MIN'KOVA, S. M.  
and KOMAROVA, E. P., Institute of Experimental Botany imeni V. F. Kuprevich,  
BSSR Academy of Sciences

[Abstract] Hypersensitive mortality of infected cells is a nearly universal feature of resistance of plants to obligate parasites. The present article reports on study to explain this phenomenon as a function of active cell metabolism in synthesis of RNA in rye plants infected with stem blight. The species studied were *Puccinia graminis* f. sp. *secalis* Erikss. et Henn, and a cultivated rye that had been receptive to the disease. Inoculate was administered only to the apical part of plant leaves. Then growth and pathological development were observed. Results showed that within 16 hours deep biochemical changes could be seen in the infected plants, especially in the basal parts of leaves of blight-resistant rye plants. In apical parts, RNA synthesis increased in both types of rye, but that synthesis was twice as intensive in the resistant species. This was regarded to be the hypersensitive protective reaction of the resistant plants. Internal toxins developed to attack the external pathogen, eliminating it at the expense of the local plant cells. In plants receptive to the pathogen, stimulated RNA synthesis only contributed to successful development and sporing of the blight fungus. Figure 1; references 14: 6 Russian, 8 Western.  
[1661-12131]

UDC 577.112.5

GTP-BINDING PROTEIN FROM BOVINE RETINA: COMPLETE AMINO ACID SEQUENCE  
OF GAMMA-SUBUNIT

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 11, Nov 84  
(manuscript received 5 Apr 84) pp 1572-1575

OVCHINNIKOV, Yu. A., LIPKIN, V. M., SHUVAYEVA, T. M., ISHCENKO, K. A. and  
TELSZHINSKAYA, I. N., Institute of Bioorganic Chemistry imeni M. M. Shemyakin,  
USSR Academy of Sciences, Moscow

[Abstract] The Edman reaction was employed in the determination of the full amino acid sequence of the gamma-subunit of bovine transducin (retinal GTP-binding protein). A map of the sequence is provided, listing the 69 amino acids in the subunit. However, amino acids at positions 35 and 36 could not be identified, although mass-spectrometry and chemical data suggest two cysteine moieties forming a disulfide bond. Calculated MW for the protein is 8008.7 daltons. References 6: 2 Russian, 4 Western.  
[1641-12172]

UDC 547.458'118.363.057:579.8.42.14

COMBINED CHEMICAL AND ENZYMATIC SYNTHESIS OF O-SPECIFIC SALMONELLA NEWINGTON  
POLYSACCHARIDE AND ITS DERIVATIVES

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 11, Nov 84  
(manuscript received 3 Apr 84) pp 1548-1552

DRUZHININA, T. M., SHIBAYEV, V. N., KOCHETKOV, N. K., ROZHNOVA\*, S. Sh.  
and KILESSO\*, V. A., Institute of Organic Chemistry imeni N. D. Zelinskiy,  
USSR Academy of Sciences, Moscow; \*Central Scientific Research Institute  
of Epidemiology, USSR Ministry of Health, Moscow

[Abstract] A combination of chemical and enzymatic methods was used to synthesize O-specific polysaccharides of Salmonella newington, the approach consisting of chemical synthesis of polyprenyl pyrophosphate saccharides, followed by enzymatic polymerization of the oligosaccharides. The

trisaccharide employed, D-Man-( $\beta$ 1-4)-L-Rha( $\alpha$ 1-3)-D-[ $^3$ H]Gal (I), served as the precursor for the serogroup E -specific O-polysaccharide of *S. newington*. Incubation of I with *S. newington* membrane preparation resulted in the transformation of the trisaccharide I into higher MW products. Analysis of the latter on Sephadex G-15 following mild acid hydrolysis indicated that hexasaccharides and longer oligosaccharides represented 80% of the yield. Determination of the degree of polymerization after NaBH<sub>4</sub> reduction showed that the average product consisted of 8 sugar moieties. In addition, it was determined that polymerization by the bacterial enzyme was accompanied by the formation of ( $\beta$ 1-6) bonds between the trisaccharides, a characteristic feature of *S. newington* polysaccharides. Modified polysaccharides were also synthesized by the use of the following moraprenyl pyrophosphate derivatives: D-talose, 4-deoxy-D-xylo-hexose, and L-Rha( $\alpha$ 1-3)-D-Glc-( $\alpha$ 1-6)-D-Gal. Figures 1; references 13: 10 Russian, 3 Western.  
[1641-12172]

UDC 547.964.4.057:547.898

#### CROWN ETHERS IN PEPTIDE SYNTHESIS

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 11, Nov 84)  
(manuscript received 5 Mar 84) pp 1445-1447

ANDRONATI, S. A. and MAZUROV, A. A., Physicochemical Institute, Ukrainian SSR Academy of Sciences, Odessa

[Abstract] A method has been devised for the synthesis of peptides from N-protected amino acids and sodium or potassium salts of amino acids in the presence of crown ethers in an organic solvent. "Salt condensation" takes place in the presence of 15-crown-5 or 18-crown-6 ethers, leading to high yields (90-97%) of N-protected peptides without preliminary activation of the carboxylate group. Subsequent growth of the peptide chain proceeds from the N-terminal amino acid. Solvation of the amino acid salt or peptide via the crown ether was conducted in dimethylformamide in the presence of N,N'-dicyclohexylcarbodiimide and N-hydroxysuccinamide, following which N,N'-dicyclohexylurea was removed by filtration. The filtrate was evaporated and the peptides recovered by crystallization or column chromatography on silica gel after neutralization with HCl. Employing this approach, the following dipeptides and tripeptides were synthesized: Glp-His, Glp-DL-Phe, Glp-DL-Phe-Pro, Boc-Gly-Gly, Z-Gly-Gly, and Z-Gly-DL-Phe. References 7: 1 Russian, 6 Western.  
[1641-12172]

## SOLID-PHASE SYNTHESIS OF SPECIFIC AMINOPEPTIDASE ADSORBENT

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 11, Nov 84  
(manuscript received 6 Apr 84) pp 1490-1495

LYUBLINSKAYA, L. A., YUSUPOVA, M. P., VAGANOVA, T. I., IVANOVA, N. M. and  
STEPANOV, V. M., All-Union Scientific Research Institute of Industrial  
Microbial Genetics and Breeding, Moscow

[Abstract] A solid-phase approach has been utilized for the synthesis of specific adsorbents of aminopeptidases, using the H-Thr(Bu<sup>t</sup>)-Phe-Pro-OH tripeptide as the specific binding moiety coupled to aminosilochrome. To enhance binding the tripeptide was extended to the tetrapeptide H-Thr(Bu<sup>t</sup>)-Phe-Pro-Gly-aminosilochrome, with the Gly moiety serving as spacer in coupling to the solid support. The tetrapeptide was synthesized by the carbodiimide method using N-acylated amino acids. Extension of the peptide chain by one amino acid moiety improved aminopeptidase binding, and yielded a sorbent with 138  $\mu$ moles/g (dry weight) of the peptide. Trials conducted with the sorbent in column chromatography showed that it was effective in purifying leucine aminopeptidase from *Aspergillus oryzae* 17-fold with a 64% yield, and the same enzyme from *Bacillus thuringiensis* 9.8-fold with an equivalent yield. Phenylalanine aminopeptidase from *Trichoderma koningii* was purified 16.6-fold in a yield of 84%. The advantages of this sorbent are its specificity for aminopeptidases, and reusability of the column (at least 30 times in one case). Figures 1; references 15: 6 Russian, 9 Western. [1641-12172]

UDC 577.232

## CONJUGATED DI-ANIONIC DINITRO COMPOUNDS AS INHIBITORS OF OXIDATIVE DEAMINATION OF MONOAMINES

Moscow BIOKHIMIYA in Russian Vol 49, No 11, Nov 84 (manuscript received 21 Feb 84) pp 1840-1846

GUREYEVA, Z. P. and MOSTYAYEVA, L. V., Tyumen State University

[Abstract] Comparative studies were conducted on the inhibition kinetics of monoamine oxidase (MO) of mitochondrial fractions derived from bovine liver, to elucidate the chemical features leading to inhibition. The study showed that in the case of a mitochondrial preparation in 0.2 M phosphate buffer, pH 7.4, the disodium salts of 1,4-dinitrobutene-2, 1,4-dinitro-2-methylbutene, and 1,4-dinitro-2,3-diphenylbutene-2 (I), as well as sodium dinitromethane and beta-nitrostyrene, inhibited MO, catalyzing the oxidative deamination of tyramine, serotonin and tryptamine. Oxidative deamination of

benzylamine was inhibited to a significantly lesser degree. The di-anionic dinitro compounds were established to function as reversible, competitive inhibitors of MO, with the exception of I which behaved as a noncompetitive inhibitor in the Lineweaver-Burke plots. The kinetics and inhibition constants obtained with these inhibitors indicate that inhibition was due to the =C-C=O-bond in the dinitro compounds, with the inhibitory parameters modified by the introduction of electron donor radicals (methyl, phenyl groups). In addition, diminished inhibition of benzylamine deamination (benzylamine is a specific substrate for the B form of the enzyme) indicated that the inhibitors exhibit considerable specificity for the A form of MO. Figures 4; references 10: 4 Russian, 6 Western.  
[1649-12172]

UDC 577.156.2

#### ENTEROCYTE PROTEASES OF PIG SMALL INTESTINE: FUNCTION OF AMINOPEPTIDASE N IN DIPEPTIDE TRANSPORT

Moscow BIOKHIMIYA in Russian Vol 49, No 11, Nov 84 (manuscript received 12 Mar 84) pp 1854-1861

VOROTYNTSEVA, T. I., BESSMERTNAYA, L. Ya., ZIL'BERMAN, M. I., MIKHAYLOVA, A. G. and ANTONOV, V. K., Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow

[Abstract] Vesicles of the brush membrane of pig small intestine were employed in a study on the mechanisms of intestinal amino acid transport, employing radiolabeled glycine and leucine and the radiolabeled dipeptide Gly-Leu. The data were analyzed in terms of intravesicular amino acid accumulation and the rate of dipeptide hydrolysis by aminopeptidase N present. Aminopeptidase N inhibitors were shown to have no effect on the accumulation of free amino acids, but depressed accumulation of amino acids derived from peptide hydrolysis. In addition, the dipeptide itself was not transported into the vesicles. It was also observed that a specific *E. coli* leucine-binding protein (LIV protein) had little effect on the accumulation of leucine produced from the dipeptide hydrolysis. These results were interpreted to indicate that the function of aminopeptidase N (in intestinal uptake of amino acids produced by dipeptide hydrolysis) lies in the fact that hydrolysis takes place during transport. The resultant amino acids never enter the extracellular space--and are therefore insusceptible to the LIV protein--but are transported by specific carriers into the vesicles. Figures 7; references 33: 2 Russian, 31 Western.  
[1649-12172]

ISOLATION AND PROPERTIES OF *BACILLUS THURINGIENSIS* AMINOPEPTIDASE

Moscow BIOKHIMIYA in Russian Vol 49, No 11, Nov 84 (manuscript received 29 Mar 84) pp 1899-1907

VAGANOVA, T. I., IVANOVA, N. M., KLEPIKOVA, F. S., LYUBLINSKAYA, L. A., YUSUPOVA, M. P. and STEPANOV, V. M., All-Union Scientific Research Institute of Genetics and Breeding of Industrial Microorganisms, Moscow

[Abstract] Systematic studies on the proteinases of *Bacillus thuringiensis*, a producer of insecticides, have revealed two intracellular aminopeptidases ( $R_f$  0.1 and 0.75 on polyacrylamide gel electrophoresis) and one extracellular aminopeptidase ( $R_f$  0.1). Isolation of the latter from the culture fluid of *B. thuringiensis* var. *finitimus*, involving successive gel filtration of Acrylex P-60, affinity chromatography on Sepharose with specific aminopeptidase inhibitor peptide (H-L-Thr(OBut)-L-Phe-L-Pro-), and gel filtration on Sephadex G-150, provided an aminopeptidase preparation with a pH optimum at 10.0 in borate buffer in a yield of 14%. The enzyme shows maximum stability in the pH range of 7.5-10.3, and readily removes hydrophobic and aromatic amino acids from the N-terminus of peptides, but not dicarboxylic amino acids. The enzyme tends to form aggregates and readily adsorbs to a variety of surfaces and, on Sephadex G-150 filtration, has an MW of 480,000 or greater. On denaturation, the MW falls to 27,000 and 53,000, representing, apparently, monomer and dimer forms of the enzyme. The enzyme is relatively thermostable, and unaffected by  $Mg^{2+}$ ,  $Fe^{2+}$ , or  $Fe^{3+}$ .  $Ca^{2+}$  has weak potential, while  $Cu^{2+}$  completely inactivates it. Figures 4; references 22: 5 Russian, 17 Western.

[1649-12172]

## BIOTECHNOLOGY

## BIOTECHNOLOGY

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 1 Dec 84 p 4

MUKHINA, A.

[Abstract] Biotechnology represents a new science in which microbes, plants and even animals are modified through insertion of genetic materials (genes) to acquire new properties. Bacteria and fungi, for example, can be modified so that they can produce hormones and other factors in large quantities, and the latter can then be used in human and veterinary medicine. Plants can be changed to mature faster, yield higher yields, and to increase their nutrient value. It is an area of active research in the USSR, actively supported and encouraged by the Soviet government. The future of this field appears to have no limitations, other than those imposed by a lack of imagination.

[174-12172]

## ENVIRONMENT

### WELL WATER QUALITY

Leningrad LENINGRADSKAYA PRAVDA in Russian 2 Dec 84 p 4

MARTYNOV, S.

[Abstract] Systematic monitoring of well water quality from nearly 3000 wells in the region around Leningrad is discussed. Chemical and bacteriological analyses of water are used to monitor water quality and detect geochemical endemic diseases with endemic fluorosis being the most prevalent endemic disease in the area. Water-quality studies include tests of clarity, taste, odor and color. Polluted wells are pumped dry, cleaned and disinfected with a 3 percent solution of chloride of lime. The importance of actions of the people themselves in preventing water pollution is emphasized and some measures which help to prevent pollution are discussed. The underground interconnection of all water supplies was explained and emphasized. [166-2791]

### PROBLEMS WITH BREEDING FARMS' WASTE PRODUCTS

Moscow MEDITSINSKAYA GAZETA in Russian 23 Nov 84 p 2

BETEVA, N., Meditsinskaya Gazeta correspondent, Chelyabinsk Oblast

[Abstract] Problems with the disposition of the waste products of the Sovkhoz imeni 60-Letiya in Krasnogorsk specializing in pig husbandry have yet to be resolved in a satisfactory manner. Initially, the wastes were simply discharged into the Uvel'ka river after rudimentary treatment. However, complaints from the citizenry stimulated the search for better alternatives. Waste products from pig farms are known for their high concentration of organic substances and are noteworthy for their noxious nature. Consequently, a treatment system was devised that called for preliminary mechanical treatment followed by two biological purification stages. On limited plots belonging to the Sovkhoz, the use of such water for irrigation appeared reasonable. Nevertheless, more extensive testing is required and the necessary means have to be devised for the implementation of such a program. In this respect, the RSFSR Ministry of Agriculture and the Ministry of Water Works appear to be playing volleyball in taking the lead in

constructing appropriate irrigation systems developed by the Yuzhuralgi-provodka Institute. As a result, the problem of disposing of the waste products persists. Both the chief sanitation physician of the oblast, A. I. Medvedev, and V. V. Shavrin, chief of treatment plant construction, are right in saying that the problem is far from solved. It has acquired particular currency in view of the planned expansions for other animal husbandry enterprises.

[1671-12172]

## EPIDEMIOLOGY

UDC 579.842.14:579.252.55]:579.61:616.98:579.842.14]-036.2-078

### CERTAIN EPIDEMIOLOGICAL ASPECTS OF STUDY OF PLASMIDS OF DRUG RESISTANT SALMONELLA

Moscow ANTIBIOTIKI in Russian Vol 29, No 11, Nov 84 (manuscript received 21 May 84) pp 819-823

ROZHNova, S. Sh. and KILESSO, V. A., Central Scientific Research Institute of Epidemiology, USSR Ministry of Health, Moscow

[Abstract] In recent years the incidence of Salmonella relative to other acute intestinal parasites has increased markedly in the USSR, largely in children up to 14 years of age and especially in infants. The present article reports on study of the spread of Salmonella, its resistance to antimicrobial and medicinal preparations, in order to determine ecological ramifications. Results indicated that the cultured Salmonella were resistant to from 5 to 10 of the antibiotics tested. Most commonly, the resistant strains were among the *S. typhimurium* species. Polyresistant strains were most common among pathogens found in very young children. Autoconjunctive R-plasmids were associated with resistance of 15% of the pathogens. Study of genetic features pointed to heterogenic cultures from various sources, which can aid in establishing ecological bonds between microorganisms and for epidemiological purposes. Figures 2; references 5: 4 Russian, 1 Western. [1657-12131]

UDC 576.895.775:576.851.45:578.086

### DISINFECTION OF PLAGUE-INFECTED FLEAS IN PREPARATION FOR ELECTRON MICROSCOPY

Leningrad PARAZITOLOGIYA in Russian Vol 18, No 4, Jul-Aug 84 (manuscript received 21 Nov 83) pp 317-318

SHCHEDRIN, V. I., VASHCHENOK, V. S., SHASHAYEV, M. A., BRYUKHANOVA, L. V. and OSIPOVA, S. P., Scientific Research Antiplague Institute of the Caucasus and Transcaucasia, Stavropol; ZIN (expansion unknown), USSR Academy of Sciences, Leningrad

[Abstract] Studies were conducted on the disinfection of fleas (*Xenipsylla cheopis*) in preparation for examination by electron microscopy.

Bacteriologic studies on decapitated and dismembered fleas demonstrated that fixation in 2.5% glutaraldehyde or 2% osmium tetroxide for 2 days resulted in disinfection. Double fixation in each fixating agent for 2 h and subsequent passage in ethanol of increasing concentration resulted in disinfection after storage for 2 days in 70% ethanol. Using the latter approach, disinfection of fleas that were not decapitated or dismembered required 10 days in 70% ethanol.

[1678-12172]

UDC 576.895.775:599.323.4

#### FLEAS (SIPHONAPTERA) OF EVORON VOLE

Leningrad PARAZITOLOGIYA in Russian Vol 18, No 4, Jul-Aug 84  
(manuscript received 17 Aug 83) pp 318-320

KOTTI, B. K., Scientific Research Antiplague Institute of the Caucasus and Transcaucasia

[Abstract] Studies were conducted on the fleas infesting the newly described vole (*Microtus evoronensis*) in the region of Lake Evoron in the Amur region. Identification of the 1400 fleas collected from the vole in the period 1977-1979 led to the designation of 8 species, among which *Ceratophyllus calcarifer* was most frequently encountered. The other 7 species less frequently encountered were *C. dissimilis*, *C. indages indages*, *C. advenarius bifallax*, *C. garei*, *Pectinotenus pectiniceps*, *Doratopsylla birulai* and *Catallagia dacenкои*. References 9 (Russian).

[1678-12172]

UDC 616.34-022-036.11-07

#### DETERMINATION OF RISK GROUP OF ACUTE INTESTINAL INFECTIONS BY POPULATION QUESTIONNAIRE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 84 (manuscript received 19 Oct 83) pp 55-58

ZAYDENOV, A. M., NARKEVICH, M. I., MILYUTIN, V. N., ZOLOTOV, P. A., SURKOV, F. A., GALYATKINA, L. I., KULOV, G. I., POPOV, G. M., RADCHENKO, A. P., GOLUBEV, B. P. and MASHECHKOVA, V. A., Rostov-on-Don Antiplague Scientific Research Institute

[Abstract] The purpose of this work was to differentiate the population into risk groups for acute intestinal infection as a function of residence in

neighborhoods with varying quality of communal structures and varying sanitary-hygienic conditions in the families of the residents. A field trip method was used, questioning 3,308 families in various neighborhoods using a questionnaire specially developed for the study. The sanitary-hygienic situation was evaluated on the basis of 56 characteristics, 25 involving general living conditions. The information was coded and transferred to punch cards and processed on a BESM-6 computer. The shortage of available living space and crowding were found to have a definite influence on the nature of transmission of acute intestinal infection. In all, 4 risk groups were differentiated on the basis of the questionnaires. Families with more than 4 adults or more than 4 children represent 12.5% of all families. Most families of group 1 have at least 8 or 9 square meters of living space per person, while in group 2 only 0 to 20.6% of families have sufficient living space. The questionnaire method is found to provide an objective evaluation of sanitary-hygienic conditions. References 3 (Russian). [1608-6508]

UDC 618.19-008.87-036.2-07

#### EPIDEMIOLOGIC ESTIMATE OF MICROBIAL POPULATION OF MOTHER'S MILK IN HEALTHY WOMEN

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 15 Dec 83) pp 79-82

BUDAGOVSKAYA, S. N., SHUTOVA, A. P., MORDVINOVA, N. B., KURNOSOVA, N. A. and SKOROKHODOVA, O. N. Moscow Scientific Research Institute of Epidemiology and Microbiology, RSFSR Health Ministry, Moscow

[Abstract] A study is presented of the frequency of detection of various opportunistic microorganisms in the milk of practically healthy women and an epidemiologic evaluation is given of mother's milk as a factor in transmission of infections to nursing children. Some 639 samples of mother's milk from 295 healthy women in the first 6 months of lactation were collected. The milk of 51 women was studied repeatedly at an interval of one week. The dynamics of infection of the intestines of 180 neonates with *Staphylococcus aureus* were studied. Enterotoxigenic activity of *Staphylococcus aureus* taken from milk was determined by double gel diffusion. The morbidity of children was studied based on case histories from the obstetric hospital and children's polyclinic; 297 children were observed in all. Various opportunistic microorganisms were taken from the milk of 86.6% of the practically healthy women. *Staphylococcus epidermis* was most frequently found, followed by *Staphylococcus aureus*. Gram-negative organisms were primarily represented by enterobacteriaceae, in 14.8% of the samples. Associations were found in 26.3% of samples containing opportunistic microorganisms, primarily *S. epidermis* and *S. aureus*. The microorganisms were found most frequently in milk during the first month of lactation. The microbial population of the milk did not exceed 500 microbe

cells of *S. aureus* or 1000 cells of *S. epidermis* per ml of milk, not dangerous for a healthy child. Mother's milk, when massively populated with opportunistic microorganisms, can represent a path of infection of the infant and can activate the contact mechanism of transmission of infection.

References 11: 6 Russian, 5 Western.

[1608-6508]

UDC 616.21(477.85)

#### SPECIFICS OF ENT PATHOLOGY IN TRIPOLI IN THE AUTUMN OF 1983

Kiev ZHURNAL USHNYKH, NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 5,  
Sep-Oct 84 (manuscript received 5 Mar 84) p 71

TANCHEV, K. S., Otorhinolaryngology Office, 20th Polyclinic, Tripoli (Libya)

[Abstract] Data are presented from analysis of ENT pathology among residents of the Buslim quarter in Tripoli, Libya, who visited the polyclinic in November-December of 1983. Ear infections were the most common cause of visits. Second most frequent were throat infections. Third most frequent were diseases of the nose and sinuses. Percentages are presented for the various types of pathologies observed.

[1014-6508]

UDC 613/2:001.5.007(47+57)"1978-1982"

TRAINING SCIENTISTS IN HYGIENE OF NUTRITION IN USSR IN 1978-1982 PERIOD

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 84 (manuscript received 24 May 84) pp 75-77

KARPLYUK, I. A., professor, Central Institute for Advanced Training of Physicians, Moscow

[Abstract] Dissertations prepared in pursuit of the Doctor of Medical or Biological Sciences degrees or the Candidate of Medical or Biological Sciences degrees in the specialty "Hygiene" in 1978-1982 and approved by the High Degree Commission of the USSR Council of Ministers were classified and analyzed according to years in which they were prepared, places in which they were prepared, places at which they were defended and area of the hygiene of nutrition to which they were related. Dissertations prepared and approved in this period (95) included 9 dissertations for the Doctor of Medical Sciences degree, 74 for the Candidate of Medical Sciences degree and 12 for the Candidate of biological Sciences degree. Nearly 90 percent of the dissertations came from 6 regions of the country (KazSSR, UkSSR, RSFSR, Moscow, Leningrad and UzSSR). Doctoral dissertations (9) were prepared, basically, at scientific research institutes with only 1 being prepared at a medical institute. Candidate's degrees were prepared at scientific research institutes (43) and medical colleges (institutes) (41) with joint preparation in 3 cases. More than half of the theses (53) were defended at specialized councils: KaSSR Scientific Research Institute of Regional Pathology, UkSSR Ministry of Health State Medical Institute in Kiev and the USSR Academy of Medical Sciences Institute of Nutrition. Most of the dissertations (80 percent) involved material concerning food and energy requirements, actual nutrition and rational nutrition of the public, new sources of foodstuffs and foreign substances in food products. A rather detailed evaluation of the subject matter presented in the dissertations was presented, subject areas which should have been included were discussed and improvements were suggested.

[1643-2791]

SAFETY OF NEW NUTRITION PRODUCT IN FORM OF DRY PROTEIN MIXTURE

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 84 (manuscript received 19 Nov 82) pp 51-54

MAYSTRUK, P. N., YATSKOVSKAYA, N. Ya., SOLOMKO, G. I., TRUNOV, V. I. and ANDRIANOVA, O. G., Scientific Research Institute of Hygiene of Nutrition, UkSSR Ministry of Health, Kiev

[Abstract] Safety of use of a new dry protein mixture containing dry clarified slaughterhouse blood and dry defatted milk in a 1:1 ratio was tested in experiments on 50 male white rats to determine if the method used to decolorize the blood (use of a peroxidase-catalase system and high temperatures) produced harmful peroxidase or other by-products. The experimental rats ate food in which all protein consisted of the dry protein mixture; protein in the control animal diet consisted of casein. An acute 30-day experiment with a 36 percent level of the new protein in the diet produced no visible differences in general condition nor behavior in either group nor in edibility of the preparation. Body weight of control animals increased by 25 percent over initial level while that of experimental animals increased by 19 percent. Studies conducted to reveal possible unfavorable effects of the preparation on the model animals or delayed sequelae of use of the protein mixture showed the product to be harmless. The product was found to be a suitable replacement for meat in various meat products and may also be used in macaroni and bakery products. Taste studies showed that the preparation does not change organoleptic properties of food products. It was recommended that the product be stored at 18-20°C and 85 percent relative humidity and that it be sold within 8 months after production.

References 8: 7 Russian, 1 Western.

[1643-2791]

DETERMINATION OF FUNCTIONAL MOBILITY OF HUMAN NERVOUS SYSTEM WITH THE PNN-3 INSTRUMENT

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian Vol 34, No 5, Sep-Oct 84 (manuscript received 4 Jan 84) pp 972-974

MAKARENKO, N. V., KOL'CHENKO, N. V. and MAYDIKOV, Yu. L., Laboratory of Physiology of Human Higher Nervous Activity, Institute of Physiology imeni A. A. Bogomolets, Ukrainian Academy of Sciences, Kiev

[Abstract] The PNN-3 instrument is used for rapid diagnosis of the psycho-physiological specifics of truck drivers but can be used for other psycho-physiological studies. The device allows production of quantitative indices of the functional mobility of the nervous system within 5 to 7 minutes by determination of the fastest possible correct differentiation of positive and inhibitory stimuli, as well as the latent period of the visual-motor reaction of selection from among three types of stimuli. This article presents a description of the method of using the instrument. A test subject sees a light, which may be red, yellow or green. If the light is green, he is instructed to press the button beneath his left hand; if red, the button beneath the right hand; if yellow - neither button. A group of 74 males 25 to 39 years of age was tested 3 times, with intervals of 2 months and 1 year between tests. Results obtained were strongly correlated, indicating reliability of the test results produced by the instrument. Figure 1; references: 5 Russian.  
[1617-6508]

VARIABILITY OF CARDIAC RHYTHM DURING INFORMATION LOADING

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sept-Oct 84  
(manuscript received 19 May 83) pp 852-858

STANKUS, A. I. and SOKOLOV, Ye. N., Palang Branch, Scientific Research  
Institute of Physiology and Pathology of the Cardiovascular System, Kaunas  
Medical Institute

[Abstract] A study is presented of changes of the structure of the cardiac rhythm under the influence of measured information loading, achieved by gradually increasing the complexity of the task of distinguishing audio signals. The task of the subject was to recognize signals at a given frequency. In each subsequent stage of the test, the frequency of incorrect signals was closer to the frequency of the correct signal to which the subject was to respond. In the healthy test-subjects, the information load resulted in an increase in heart rate, with a simultaneous decrease in the total energy of the rhythmogram spectrum. Cluster analysis of curves of the variation in R-R interval as a function of stage of the study revealed two major types of curves, allowing the test-subjects to be divided into two major groups. In the first group, with higher initial heart rate, the degree of heart rate which increases during information load was also greater. Subjects with a higher level of parasympathetic influence were more effective in processing the information presented. Figures 5; references 11: 5 Russian, 6 Western.  
[119-6508]

STUDY OF COGNITIVE STYLES OF STUDENTS IN AUTOMATED TEACHING SYSTEM

Moscow VOPROSY PSIKHOLOGII in Russian No 4, Jul-Aug 84 (manuscript received 18 Mar 83) pp 70-76

BRUTSENTSOVA, TAT'YANA ALEKSANDROVNA, Candidate of Psychological Sciences,  
teacher, Kirovograd Pedagogical Institute

[Abstract] Computer-assisted experiments revealed cognitive styles in students which must be considered during development of computer-assisted teaching systems and showed the possibility of using computer-based teaching systems in psychological study of aspects of teaching. Subjects included 12 8th grade students and 7 Moscow State University students using 3 variants of the BASIC language. Two cognitive styles were noted. Subjects with cognitive style A acted impulsively without preliminary analysis of the situation, used trial and error and guess work and did not worry about mistakes, while those with cognitive style B were very cautious, analyzed carefully in order to avoid errors, checked their answers carefully, made few

errors but were greatly bothered by them. The experiments showed the advisability of using computer-assisted teaching methods in teaching students with individual differences. A brief account of the history of the study of this problem is presented. References 23: 9 Russian, 14 Western.  
[1636-2791]

#### FUNCTIONAL ROLE OF TYPE OF PERSON'S TEMPERAMENT IN INDIVIDUAL AND MUTUAL ACTIVITY

Moscow VOPROSY PSIKHOLOGII in Russian No 4, Jul-Aug 84 (manuscript received 18 Sep 83) pp 102-107

BELOUS, VALERIY VLADIMIROVICH, doctor of psychological sciences, scientific associate, Institute of General Genetics, USSR Academy of Sciences, Moscow

[Abstract] Study of 48 students, ranging in age from 18-20 years, in 2 series of experiments, revealed an A-type temperament (extroverted, changeable, not overly cautious, emotional and impulsive) and a B-type temperament (introverted, rigid and anxious). A-type subjects were more successful in work requiring speed in reception and processing of information while B-type subjects excelled at regulated activity, controlled by the subject himself. Subjects with different types of temperament were equally valuable in individual higher level activities. Effectiveness of common activity was linearly dependent on properties of the psychodynamic level of integral individuality. References 18 (Russian).  
[1636-2791]

#### DIALOG SYSTEM OF PREPARATION AND PRESENTATION OF VISUAL INFORMATION

Moscow VOPROSY PSIKHOLOGII in Russian No 4, Jul-Aug 84 (manuscript received 27 May 82) pp 118-120

KULAICHEV, ALEKSEY PAVLOVICH, candidate of physico-mathematical sciences, senior scientific associate, Department of Biology, Moscow State University imeni M. V. Lomonosov; RAMENDIK, DINA MIKHAYLOVNA, candidate of psychological sciences, junior scientific associate, Department of Biology, Moscow State University imeni M. V. Lomonosov; SLAVUTSKAYA, MARIYA VALER'YEVNA, candidate of biological sciences, junior scientific associate, Department of Biology, Moscow State University imeni M. V. Lomonosov

[Abstract] This article describes a dialog system to be used as an automated means of preparing and carrying out experimental studies of men solving problems involving visual presentation of information. Detailed explanation of

operation of the system is presented and an experiment of an engineering-psychological nature and one involving study of solution of complex logic problems are presented and discussed. The experimenter may employ the display and its standard keyboard to set up and carry out the experiment. References 2 (Russian).  
[1636-2791]

IMMUNOLOGY

UDC 612.111.017.1:612.118.221.2](-919.81)

FEATURES OF ANTIGENIC STRUCTURE OF ERYTHROCYTIC SYSTEMS Rh-Hr, MNSS, R, DUFFY, KIDD, KELL-CHELLANO, LEWIS, LUTHERAN AND DIEGO IN ARMENIANS

Moscow IMMUNOLOGIYA in Russian No 5, Sep-Oct 84 (manuscript received 17 Jun 82) pp 15-18

NERSISYAN, V. M., AKOPYAN, L. P., MARTIROSYAN, I. G. and MUSAYELYAN, N. O., Armenian Scientific Research Institute of Hematology and Blood Transfusion imeni R. O. Yeolyan, Yerevan

[Abstract] Data concerning study of distribution frequency of genetic markers and corresponding genes of 9 erythrocytic systems among healthy Armenians ranging in age from 18-25 years are presented for the first time. Frequency of occurrence of antigens of Rh-Hr, Duffy, Kidd, Kell-Chellano and SsP systems in the Armenians studied was the same as that found in other European populations but differed from that found in Asian peoples. The distribution frequency of antigens of MN, Lewis, Lutheran in the Armenians studied differed from that found in most European populations. The Dia factor is absent in both the Armenian population and in Europeans. This study made it possible to develop a blood bank at the Armenian Scientific Research Institute of Hematology and Blood Transfusion which can provide immunologically compatible blood for sensitized persons. References 12: 7 Russian, 4 Western.  
[147-2791]

UDC 615.339:578.245].015.4.07

ANTITOXIC ACTION IN VIVO OF LEUKOCYTIC INTERFERON

Moscow ANTIBIOTIKI in Russian Vol 29, No 11, Nov 84 (manuscript received 3 Feb 84) pp 834-836

BABAYANTS, A. A. and KARGANOVA, G. G., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] The fight against staphylococcic infection has grown increasingly important in recent years. The present study continues the authors'

earlier work on the role of interferon in a mixed flu-staphylococcic infection, as they consider interferon's action on alpha-toxin in this type of infection. Interferon was collected from mice subjected to Newcastle's disease, while human, swine and bovine interferons were also collected. The interferons were administered to test rats 2 hours before, simultaneously with, and 2 hours after they were subjected to staphylococcus infection. Results showed that the interferon protected the test mice from the disease, regardless of its origin: while 50% of test mice died without interferon, 80% survived when given mouse interferon, 90% when given human interferon, and 70% when given swine interferon. While these leukocytic interferons had such an effect, endogenous and exogenous mouse interferon had no such impact, thus indicating the antitoxic factor in leukocytes. The nature of the substance providing this protection must be found by further study. References 3 (Russian). [1657-12131]

UDC 579.841.93.083.3

#### IMMUNOLOGIC DESCRIPTION OF BRUCELLA CELL COMPONENTS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 14 Sep 83) pp 92-96

SHIN, N. G., REMENTSOVA, M. M., STUDENTSOVA, V. K., TSIREL'SON, L. Ye.,  
TSOY, V. P. and SHURATOV, I. Kh., Scientific Research Institute of Epidemiology, Microbiology and Infectious Diseases, Kazakh SSR Ministry of Health, Alma-Ata

[Abstract] Assuming that an individual antigen might stimulate primarily a certain given link of the immune system, the authors set themselves the task of selecting such antigens, allowing a study of various mechanisms of anti-brucellosis immunity. Studies were performed on 360 guinea pigs, using brucella cell walls, water insoluble lipopolysaccharide and low-molecular-weight glycopeptides. These preparations were obtained from both standard pathogenic and vaccine brucella strains of smooth and rough forms. Low molecular weight glycopeptide was found to stimulate defense without development of circulating antibodies for changes in the skin sensitivity. The water in soluble lipopolysaccharide did not stimulate anti-brucellosis resistance but did induce the synthesis of specific antibodies and form moderate, delayed hypersensitivity. There was clear dissociation between anti-brucellosis defense and antibody formation, as well as hypersensitivity. These phenomena are obviously stimulated by different chemical components of brucella. The leading role of macrophages gives specific brucellosis immunity certain nonspecific features such as absence of circulating antibodies and secretion of sensitized T lymphocytes. References 18: 9 Russian, 9 Western. [1608-6508]

STUDY OF EFFECTS OF DELAYED TYPE HYPERSENSITIVITY IN VIVO IN EXPERIMENTAL FLAVIVIRUS INFECTIONS AND IN VACCINATION AGAINST TICK-BORNE ENCEPHALITIS IN MICE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 84 (manuscript received 4 Apr 84) pp 83-87

LIPOVKA, V. A., KHOZINSKIY, V. V. and SEMENOV, B. F., Institute of Poliomyelitis and Viral Encephalitides, USSR Academy of Medical Sciences, Moscow

[Abstract] Data are presented on the formation of effects of delayed hypersensitivity in vivo in experimental tick-borne encephalitis and certain bunya and flavivirus infections in mice. It is shown that delayed hypersensitivity effectors induced by inactivated vaccine against tick-borne encephalitis have no protective effect following adoptive transfer to infected syngeneous recipients. The development of experimental infections is accompanied by the formation in mice of delayed hypersensitivity to viral antigens in vivo. In experimental tick-borne encephalitis the delayed hypersensitivity effectors are described as T lymphocytes, the effect of which is specific and follows the H-2 restriction rule. Delayed hypersensitivity T effectors induced by inactivated tick-borne encephalitis vaccine had no cytotoxic effect on infected syngeneous tissue cultures and did not protect the syngeneous recipients infected with tick-borne encephalitis virus in adoptive transfer i/v in vivo. Figures 2; references 16: 5 Russian, 11 Western.  
[1608-6508]

INTRACELLULAR NEUTRALIZATION OF BACTERIOPHAGE T4 BY ANTIPHAGE SERUM

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 84 (manuscript received 11 Oct 83) pp 74-75

TSUTSAYEVA, A. A., MIKULINSKIY, Yu. Ye., VYSEKANTSEV, I. P. and DEGTYAREV, A. V., Institute of Problems of Cryobiology and Cryomedicine, Ukrainian SSR Academy of Sciences, Khar'kov

[Abstract] A study was made of the possibility of neutralizing particles of T4 bacteriophage formed with cells with a specific antiphage serum contained in the liposome. Penicillin spheroplasts of E. coli B were used. The specific antiserum was obtained by immunization of rabbits with washed T4 bacteriophage. The neutralization rate constant of the specific antiserum was 46. Liposomes were obtained by formation of lamellar vesicles from chromatically pure egg lethicin with the addition of 1.2% kephelin. The data

indicate that specific antiserum introduced to cells with liposomes neutralizes the intracellular phage particles formed. Liposomes containing non-specific serum and gamma globulin do not have this neutralizing effect on the intracellular phage particles. Introduction of specific antisera or immunoglobulins into the cells with liposomes can be used in the development of treatments for various viral infections. References 4: 2 Russian, 2 Western.  
[1608-6508]

## LASER EFFECTS

UDC 616-006.04-085.849.19-036.8-092:612.017.1

### IMMUNOLOGICAL STATUS OF BODY AFTER TUMOR IRRADIATION WITH PULSED LASER

Moscow IMMUNOLOGIYA in Russian No 5, Sep-Oct 84 (manuscript received 28 Jul 82) pp 54-56

MOSKALIK, K. G., Institute of Oncology imeni Professor N. N. Petrov, USSR Ministry of Health, Leningrad

[Abstract] Study of cellular and humoral immunity in 18-20 g C57BL/6 mice with melanoma B<sub>16</sub> or Lewis carcinoma implanted under the skin of the right rear leg involved study of immunological indicators 7-10, 14 and 24-27 days after pulsed neodymium-laser irradiation. In first days after irradiation, change of immunological status was expressed in reduction of proliferative reaction of T-lymphocytes of peripheral blood to phytohemagglutinin, increase of the number of antibody-forming cells in the spleen and appearance of antibodies against the irradiated tumors in the blood serum. Restoration of the indicators studied up to the control level occurred gradually.

Figure 1; references 16: 8 Russian, 8 Western.  
[147-2791]

UDC 619:616.982.11-085:636.32/.38

### LASER USE IN THERAPY OF SHEEP'S HOOF ROT

Moscow VETERINARIYA in Russian No 10, Oct 84 p 40

VLASENKO, V. M. and BURDENYUK, A. F., Bela Tserkov Agriculture Institute

[Abstract] The use of laser therapy, a recent phenomenon in veterinary medicine, was tested for effectiveness in treating sheep hoof rot. The experimental group of animals was irradiated with an LG-56 laser unit (wavelength 630 nm, intensity 1.5 mW/mm of hoof surface) for 3 min per one diseased hoof three times, one day apart between exposures. After irradiation, the surface dried out and at the end of the therapy a new growth of a corneal layer was noticed. Only one of the 20 experimental animals showed a small ulcer after

the course of treatment. Most of the control animals (12 out of 20) showed no improvement. Hence laser irradiation along with hoof cleaning and a formalin bath proved to be effective in treating the sheep hoof rot.  
[1599-7813]

UDC 616.284-002:615.849.19

#### LASER TREATMENT OF OTITIS MEDIA IN CHILDREN

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 8, Aug 84 pp 30-31

PODOYNITSYNA, L. F., Chair of Otorhinolaryngology, Alma-Ata Medical Institute

[Abstract] Clinical trials were conducted with the helium-neon LG-75 laser (632.8 nm, 0.1 W/cm<sup>2</sup>) in the management of 50 children with acute and chronic otitis media. The sessions consisted of 30 sec irradiation directed at the middle ear through the external meatus for a period of 5 days. Positive results were obtained in 45 of the patients with cessation of discharge on the 2nd or 3rd day, and return of hearing by the end of the week. The remission was not permanent in one patient with recurrent otitis media. These observations indicate that the anti-inflammatory effects of helium-neon irradiation constitute an effective treatment modality in children with otitis media. References 6 (Russian).  
[1655-12172]

UDC 616.21-095-06:616.849.19

#### INFLUENCE OF He-Ne LASER RADIATION ON GROWTH OF CERTAIN MICROBES

Kiev ZHURNAL USHNYKH, NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 5, Sep-Oct 84 (manuscript received 16 Dec 83) pp 66-67

GUBACHEK, I. and CHERNA, I., Otorhinolaryngology Clinic (headed by candidate of medical sciences Y. Navratil), Department of Microbiology (headed by professor Z. Kreychi, Faculty of Medicine, University imeni Palatsky, Olomouc, CSSR

[Abstract] A study was performed of the influence of stimulating doses of laser radiation on the growth of Staphylococcus aureus, Streptococcus beta-haemolyticus, Streptococcus pneumoniae, and Neisseria catarrhalis. The variation in growth of microbes as a function of laser radiation exposure was examined. In a second experiment, a 20-hour broth culture of the same species of microbes was prepared. The culture was incubated for 2 hours. After laser radiation for 10 minutes, incubation was continued another 2 hours in a thermostat and 10 more minutes of laser radiation was applied.

Finally, evaluation was performed after 20 hours. In the first experiments, no visible differences were seen in the cultures. In the second, activity of the cultures irradiated by the laser was slightly higher than that of control cultures. No changes in growth of microbes studied was proven after initial irradiation, but there was a slight increase in the growth phase after the second irradiation. References 5: 2 Russian, 3 Western.  
[1014-6508]

## MEDICINE

### ELECTROSLEEP THERAPY ADVANCED AT MEDICAL INSTITUTE

Moscow MEDITSINSKAYA GAZETA in Russian 7 Dec 84 p 3

[Abstract] The article reports on research activities and recent developments of the Latvian Scientific Research Institute of Experimental and Clinical Medicine, which is headed by Velta Mikelevna Bramberga.

Oncology and physiology are said to be the two main research directions of the institute. In laboratories of the department of physiology, researchers are studying features of the brain's inter-hemisphere neurodynamics under intense mental, emotional and physical stresses, and they are developing methods for quick diagnosis of various psychophysiological states.

Associates of the department's neurophysiology laboratory, which is headed by A. A. Krauklis, are working on the development of methods for preventing nervous disorders and overstress and on the improvement of electrostimulation methods for the treatment of various disorders. In particular, they have demonstrated the relative ineffectiveness, for therapeutic purposes, of conventionally practiced electrosleep methods, which they have found do not take into account functional features and interactions of the brain's hemispheres. As a result, the researchers have developed and introduced a selective method of cerebral electrostimulation using a pulsed current, optimal parameters of which are selected for the right and left hemispheres separately, taking the patient's individual signs into account. This method makes it possible to heighten the therapeutic effect of electrosleep substantially and to shorten and streamline the course of therapy, it is claimed.

CSO: 1840/1669

FOLIC ACID DEFICIENCY IN ADULT POPULATION (EPIDEMIOLOGY, PATHOGENESIS, CLINICAL FEATURES AND PROPHYLAXIS)

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 84 (manuscript received 27 Oct 83) pp 7-11

YEFREMOV, V. V., Institute of Nutrition, USSR Academy of Medical Sciences, Moscow

[Abstract] A 20-year study of the etiology, pathogenesis and specific features of the course of anemias in indigeneous peoples of southeastern Uzbekistan showed that these are based on factors, among which the major roles belong to deficiency of folic acid, vitamin B<sub>12</sub>, ascorbic acid, iron and protein. This nosological form was called polydeficit anemia although folic acid deficiency was most pronounced. Use of folic acid, vitamin B<sub>12</sub> and ascorbic acid in a complex with protein preparations and a high protein diet greatly improved the blood picture of patients. Study of folic acid metabolism in 107 chronic alcoholics showed pronounced folic acid metabolism disturbance in proportion to the stage of the disease. The peripheral blood picture of chronic alcoholics showed a reliable connection between blood changes and the degree of disturbance of folic acid metabolism. Macro-ovalocytosis was seen in 54 percent of the subjects. Neurological and psychopathological disturbances in chronic alcoholics were seen in proportion to the degree of folic acid deficiency. Neurites predominated in alcoholics with slight folic acid deficiency, polyneurites was seen in those with slight deficiency while disturbances of memory and depression were seen in those with severe deficiencies. Prescription of teturan and metranidazol, folic acid and a high protein diet restored the blood serum folic acid level almost to normal, decreased urinary excretion of formiminoglutamic acid and reduced dihydropyrimidine reductase activity in blood serum. References 26: 5 Russian, 21 Western.  
[1643-2791]

PHYSICIANS REJECTING SERVICE ASSIGNMENTS

Moscow MEDITSINSKAYA GAZETA in Russian 30 Nov 84 p 3

TEREKHOV, A., Meditsinskaya Gazeta correspondent, Novgorod

[Abstract] The problem of retaining physicians in the Novgorod Oblast is an acute one. Most new assignees last less than their required period of three years, and leave with the time-worn excuses of family obligations and lack of opportunities for advancement and professional growth. None of them shows the initiative that it takes to improve the local situation, or to elicit support from the local authorities in improving the working conditions at their clinics or ambulatories. In view of all this, the local authorities

have initiated a program in which local boys and girls are encouraged to enter the medical profession. In conjunction with the First Leningrad Medical Institute imeni I. P. Pavlov, they have organized a preparatory department with 60 places. Individuals who finish it successfully will be admitted to the medical curriculum, and the first few local students have already entered upon the study of medicine. Admission to the department requires one year of work at a factory or a plant, or two years in a medical setting. This would appear to discourage those truly interested in medicine, and it might be better to reevaluate such admission requirements.  
[1672-12172]

UDC 613.2-053.9[479.224]

#### SPECIFIC FEATURES OF ACTUAL NUTRITION OF ELDERLY PEOPLE IN ABKHAZIAN ASSR

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 84 (manuscript received 23 Jan 84) pp 22-27

GRIGOROV, Yu. G., KOZLOVSKAYA, S. G. and MEDOVAR, B. Ya., Institute of Gerontology, USSR Academy of Medical Sciences

[Abstract] Actual nutrition as reported in questionnaires and from weighted questions was studied in families of elderly persons (68 persons ranging in age from 60-74, 64 persons ranging in age from 75-89 and 46 persons 90 years old or older) in 3 Abkazian villages. Their diet consisted primarily of dairy products, meat products, eggs, fruit, vegetables and groats, consumed immediately after preparation. Dietary products included 30-40 items which included all 6 basic food groups. The conservative diet adhered strictly to observance of national habits and traditions. There is high consumption of dairy and vegetable items, low consumption of salt, sugar, meat and meat products, fish and fish products, vegetable oil and moderate use of alcohol. The diet reflected the necessity of adapting to the climatic and geographical features of the area. The subjects ate a diet balanced in practically all basic ingredients regardless of reduction of amounts eaten with advancing age. The nutrition pattern resembles that used in experimental studies of possible prolongation of life. None of the known alimentary risk factors of age-related pathologies was noted. The benefits obtained from the diet are due to the entire complex of this type of nutrition with good nutrition beginning in childhood and continuing throughout life. References 32: 21 Russian, 11 Western.  
[1643-2791]

## ADVANCES IN HEART TREATMENT

Moscow NEDELYA in Russian No 50, 10-16 Dec 84 p 2

SMIRNOVA, M.

[Abstract] A discussion with Academician Yevgeniy Ivanovich Chazov, director of the All-Union Cardiological Center of the USSR Academy of Medical Sciences, deputy of the Supreme Soviet of the USSR, Hero of Socialist Labor, and Laureate of the Lenin and State prizes of the USSR, summarized the recent advance in cardiology, a relatively recently developed clinical specialty. The All-Union Cardiological Center is a unique research and clinical institution that has no counterpart anywhere else in the world, and has been referred to by the (American) TIME magazine as the "City of Cardiology in the USSR." Basic research at the Center has shown, for example, that the human endothelium consists of four types of cells rather than being a homogenous structure. Any disturbance leads to atherosclerosis. Drugs are being actively sought which will reverse or correct any endothelial pathology and, hopefully, thereby prevent or cure atherosclerosis. In addition, immunophoresis has been developed as a new technique in the elimination of certain blood constituents that may be involved in the development of atherosclerosis. Recent developments in the treatment of thromboembolism involve the use of immobilized enzymes that ensure long-term action. For example, a long-lasting (72 h) streptodecase preparation has been used in dissolving clots in various conditions, including myocardial infarction. Such preparations are also used in ophthalmology for retinal vessel thromboembolism to save sight. The peptide laboratory has produced a number of interesting principles, including dalargin [sic]--an antistressor useful in the management of hypertension and peptic ulcers. Among the more recent diagnostic developments, one has to mention international efforts in the creation of nuclear magnetic resonance tomography. An important activity of the Center is the training of new specialists in cardiology who will carry on the Hippocratic tradition in medicine.  
[1666-12172]

UDC 616-006-0.8:615.847+616+89.87

## INDUCTION OF BREAST CANCER REGRESSION BY PRESURGICAL MAGNETOTHERAPY

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 10, Oct 84 pp 60-63

SULEYMENOV, M. Kh., RAKHMETOV, K. K., SULEYMENOV, A. A., LYU, B. N., SEROVA, N. N. and FEFELEVA, M. V., Kazakh Scientific Research Institute of Oncology and Radiology, Alma-Ata

[Abstract] Prior to surgery, 24 patients with malignant breast lesions 3.0-8.0 cm in diameter were subjected to 800, 1000 or 1200 oe magnetotherapy for 10-22 days. Analysis of the outcome of such presurgical therapy indicated

that regression of the tumor was evident two to three days after the initiation of therapy, with the average degree of regression reaching 60.5%, and the lesions becoming unpalpable. There were no remarkable side effects in the 42-73 year old patients; the course of surgery and postsurgical recovery was uneventful. Histopathologic examination of the tumors obtained during surgery showed numerous necrotic and hemorrhagic foci, dystrophic changes, and elements of connective tissue stroma and fatty tissue on the tumor periphery. These observations point to the usefulness of magnetotherapy in the management of mammary tumors, and the need for further refinements in this therapeutic approach. References 4 (Russian).  
[1652-12172]

UDC 616.98:579.862.1]=06-078.73 :

IMMUNOGLOBULIN FC RECEPTION OF STREPTOCOCCI AND ITS PARTICIPATION IN POST-STREPTOCOCCAL COMPLICATIONS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 28 Apr 84) pp 12-20

BUROVA, L. A., TOTOLYAN, A. A., KRISTENSEN, P. and SHALEN, K., Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad; Institute of Medical Microbiology, Lund University, Sweden

[Abstract] Modern concepts concerning immunoglobulin Fc-reception of streptococci and its significance in post-streptococcal complications are discussed. Studies have shown that the reaction of staphylococcus with normal human serum results from the interaction of microbiol protein A with the Fc portion of IgG. Analogous reactions have been described for streptococcus of serogroup A, C and G for all classes of human IgG. Streptococcus can react with IgA and other serum proteins as well. This review discusses only immunoglobulin FcR, methods of their identification, their occurrence, immunologic characteristics and biological functions. The significance of the capability of streptococcus to bond human immunoglobulin and the results of this capability for the macroorganism are briefly discussed. Figure 1; references 80: 7 Russian, 73 Western.  
[1608-6508]

UDC 579.852.13.04:546.72].08

STUDY OF INFLUENCE OF IRON ON GROWTH AND TOXIN FORMATION OF TYPE A CLOSTRIDIUM PERFRINGENS CULTURES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 22 Dec 83) pp 20-24

ARTEMENKO, V. D., KUZNETSOVA, G. I. and NENASHEV, V. P., Central Scientific Research Institute of Vaccines and Sera imeni I. I. Mechnikov, Moscow

[Abstract] Analysis of the literature showed that the optimal iron content for maximum growth and toxin formation of Cl. perfringens type A varies as a

function of type of nutrient medium. This article presents a study of the optimal range of iron content tolerance providing the maximum toxin formation of the culture in new protein media of nonnutrient origin. The media with various protein bases differed in the content of nitrogen substances and iron. The influence of various additionally added concentrations of iron on growth and toxin formation was studied. It was found that iron added to the initial media at 1-30 mg% had no significant influence on growth or reproduction of *Clostridium perfringens* type A, and inhibited toxin formation. The optimal content of iron varied for various types of nutrient media. In nutrient media supplemented by nutrient yeast extract, particularly those based on enzymatic hydrolysate of feed yeast, there was significant resistance of toxin formation to elevated concentrations of iron, a positive factor in the use of these media for production purposes. Figure 1; references 19: 16 Russian, 3 Western. [1608-6508]

UDC 579.8:579.222:547.915

SIGNIFICANCE OF LIPID ANTIOXIDANT ACTIVITY IN SUPPORTING VIABILITY OF MICROBE CELLS IN AIR

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 3 Apr 84) pp 24-26

BOGOSLOVSKAYA, O. A., BURLAKOVA, Ye. B., GLUSHCHENKO, N. N., KONYUKHOV, V. F. and KHRAPOVA, N. G., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow; Institute of Chemical Physics, USSR Academy of Sciences, Moscow

[Abstract] Lipids of various tissues and membrane structures of eukaryote cells have antioxidant activity, changes in which are significant for a number of pathologic processes. This article reports on a study intended to determine whether the lipids of *E. coli* cells grown under ordinary cultivation conditions have antioxidant activity and to determine the significance of this activity in supporting stability of the bacteria in air. Studies were performed on lipids of cells of 4 strains of *E. coli* K-12: GA9, GA9/pSA25, AB1157, AB2494 and two strains of *E. coli* B: Wp-2 and Bs-1. Antioxidants in the lipids were evaluated by their inhibition of oxidation of methyl oleate and the change in the intensity of luminescence developing upon initiation of oxidation of ethyl benzene caused by the lipids. It is found that the lipids do have antioxidant activity, varying in the several strains. Natural antioxidants in VA9 represent 0.1% of all lipids. Their antioxidant activity is  $3.9 \cdot 10^5$  liter/(mol·s), close to the values seen in eukaryote cells. Figure 1; references 7: 6 Russian, 1 Western. [1608-6508]

## ADHESION OF YERSINIA PSEUDOTUBERCULOSIS SEROTYPE III

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 17 Jan 84) pp 36-40

VODOP'YANOV, S. O., MISHAN'KIN, B. N. and KIRDEYEV, V. K., Rostov-on-Don  
Antiplague Scientific Research Institute

[Abstract] The purpose of this work was to find strains of *Y. pseudotuberculosis* capable of adhering to the cells of mammals, and also to study and describe the factors mediating this process. The search was conducted among strains of *Y. pseudotuberculosis* of serotypes I-VI after Thal in columns of L agar at room temperature. Electron microscope studies were performed with a 1% solution of uranyl acetate as a contrast agent. A strain of *Y. pseudotuberculosis* of serotype III was found to be capable of adhering to the cells of mammals by the hemagglutination reaction performed by agglutination on glass. Attachment of the pathogenic cells is mediated by special adhesion pili which are similar to the columnization factors known from previous experiments. The pili are assumed to participate in expression of virulence of *Y. pseudotuberculosis*. Figures 4; references 10: 5 Russian, 5 Western. [1608-6508]

## COMBINED USE OF MICROBIOLOGICAL METHODS FOR INTRASPECIES DIFFERENTIATION OF SHIGELLA SONNEI. REPORT II. SIGNIFICANCE OF S. SONNEI STRAINS RELATING TO UNCLASSIFIED PHAGOTYPES IN ETIOLOGY OF DYSENTERY IN BULGARIA

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 28 Dec 83) pp 45-49

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[Abstract] Data are presented on the epidemiologic significance of *S. sonnei* phagotypes not included in the Hammarstrom-Kallings classification--and thus called nonclassified types--for the nation and their role in attempts to improve the method of phage typing of *S. sonnei*. Some 1234 strains of nonclassified *S. sonnei* isolated from 425 epidemic foci in various districts of the nation were studied between 1973 and October of 1983. Phage typing was performed by the usage of international and Bulgarian sets of phages, biotyping, colicon typing, antibiotic typing, as well as methods for determination of lysogenic properties of strains and properties of R. plasmids. Of all the strains studied, 10.07% could not be placed in known Hammarstrom-Kallings phage types. Of the 68 nonclassified phage types, 24 have a stable

lytic picture and epidemiologic significance. Most of the unstable lytic reactions were found to be dependent on lysogenic properties of the strains. Although some of the R plasmids have inhibitor properties for *S. sonnei* phages, the inhibition type cannot be explained by the development of non-classified phage types from known phage types. A correlation is established between unclassified phage types and Bulgarian phage types, allowing them to be used to differentiate some of the nonclassified phage types. Seventy-five percent of the nonclassified phage types are found in other countries as well as Bulgaria, and most are epidemiologically important. References 20: 5 Russian, 15 Western.  
[1608-6508]

UDC 579.842.14:579.252.55:615.33

INFLUENCE OF MULTIPLE ANTIBIOTIC RESISTANCE PLASMIDS ON CHANGE IN *SALMONELLA* TYPHIMURIUM PHAGOVAR

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 21 Jun 83) pp 49-51

KAFTYREVA, L. A., NARVSKAYA, O. V., BARISOV, L. B. and KHAZENSON, L. B.,  
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imeni Pasteur; First Leningrad Medical Institute imeni I. P. Pavlov

[Abstract] A study is made of the influence of acquired plasmid resistance to antibiotics in the *S. typhimurium* phagovar. Selection of transconjugates was performed by the marker of resistance to one of four antibiotics. Selection of transconjugates obtained upon crossing of the intermediate R plasmid donor *E. coli* was based on auxotrophic markers on minimal agar. The frequency of transmission of resistance markers to antibiotics was expressed as the ratio of the number of transconjugants to the number of recipient cells. Multiple antibiotic resistance in hospital *S. typhimurium* strains was found to be mediated by a transmissible R plasmid. The antibiotic resistant plasmid transmitted to *S. typhimurium* strains is sensitive to antibiotics and changes their sensitivity to typical phages, leading to a change in phagovar in R plasmid recipient strains. References 10: 5 Russian, 5 Western.  
[1608-6508]

EFFECT OF VIBRIO CHOLERAEE ENTEROTOXIN ON MICROORGANISMS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 27 May 83) pp 51-55

ANDRUSENKO, I. T., PASTERNAK, N. A., VED'MINA, Ye. A., ALEKSANDROVA, I. K.,  
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Training of Physicians, Moscow; Institute of Epidemiology, Microbiology and  
Hygiene, Rostov-on-Don

[Abstract] This work presents a study of the influence of the V. cholerae enterotoxin on various species of opportunistic microorganisms with normal respiration. Concentrated cholero-gen and antitoxic serum were used in the study. To study the effect of the concentrated enterotoxin and filtrates on various representative opportunistic microflora, cultures were used isolated from humans. The control in these experiments was a mutant of S. aureus. The sensitivity of the cultures to enterotoxin was determined by testing suppression of cellular dehydrogenases. It was found that the cytotoxic effect of V. cholerae enterotoxin is universal, since it extends not only to representatives of the eukaryotes, but also the prokaryotes. The enterotoxin under certain conditions may act as one factor of intra- and inter-species antagonism of bacteria. References 4: 2 Russian, 2 Western.  
[1608-6508]

ESTIMATE OF SIGNIFICANCE OF CERTAIN PROPERTIES FOR VIRULENCE OF VIBRIO CHOLERAEE AND DETERMINATION OF THEIR CORRELATIONS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 4 Jul 83) pp 58-63

URALEVA, V. S., CHEREPAKHINA, I. Ya., FETSAYLOVA, O. P., GULIDA, M. M.,  
KOLESNIKOVA, L. I., KUTYREVA, I. V. and POMUKHINA, O. I., Rostov-on-Don  
Antiplague Scientific Research Institute

[Abstract] A study is presented of collections of strains and mutants of V. cholerae based on properties related to virulence or thought to be related to virulence. Possible correlations of these properties with each other and cholerogenicity for nursing rabbits are studied. Thirty-four strains and 31 mutants of V. cholerae with various biological characteristics were studied. Mobility was determined in U-shaped tubes with 0.3% agar. Adhesive properties were studied in vitro. Lecithinase activity was studied in EDS medium. Viability was determined as the number of living V. cholerae cells

per ml of a one billion suspension of 18 hour agar culture. Analysis of the data revealed direct moderate correlation of cholero-genicity with mobility, lecithinase activity, viability and for *V. cholerae* el tor - virulence, as defined by the phage method, and an inverse correlation with hemolytic activity. A weak direct correlation was also observed between cholero-genicity and agglutinability of diagnostic cholerae sera and the presence of dermal vascular permeability factor. No correlation was found between cholero-genicity and neuraminidase activity, capacity for survival in vivo, adhesion or other properties related to virulence with the exception of the direct moderate correlation with viability. Figure 1; references 12: 7 Russian, 5 Western.  
[1608-6508]

UDC 616.935-078.73

UNUSUAL SEROVAR OF FLEXNER DYSENTERY PATHOGEN. REPORT I. OCCURRENCE AND BIOCHEMICAL PROPERTIES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 84 (manuscript received 15 Jul 83) pp 63-67

PRYAMUKHINA, N. S., AL'DOVA, Ye. A., BOBROVA, T. P., KHOMENKO, N. A. and YERSHOV, A. A., Central Scientific Research Institute of Epidemiology, USSR Ministry of Health; All-Union Center for Shigellosis, Moscow

[Abstract] Observations in recent years of the appearance of strains of *S. flexneri* IV:7, 8 by the author's group have required a study of their occurrence and biological properties. Materials on the frequency of the circulation of *S. flexneri* IV:7, 8 were collected and summarized at the authors' institute in 1980-1983. Thirty-two biochemical tests were used to study the properties of 141 *S. flexneri* IV:7, 8 strains isolated in patients, from water and from apes, including one patient in Czechoslovakia and one in London. It was found that strains of *S. flexneri* of serovar IV different from known strains in antigen structure were common in the Soviet Union in 1980-1983. In many territories *S. flexneri* IV:7, 8 represented a significant fraction in the intraspecies structure of flexner dysentery pathogens in 1981-1982. The strains studied were determined to have identical biochemical activity, differentiating them from known subserovars 4A and 4B and from var. X. Antibiotic resistance for 9 antibiotics studied was found to vary as a function of territorial origin. References 17: 11 Russian, 6 Western.  
[1608-6508]

UDC 577.214.622:578.56:577.152.314

UNIDIRECTIONAL ORIENTATION OF E. COLI rpoB GENE CLONED IN FILAMENTOUS PHAGES M13mp8 AND M13WB2348

Moscow BIIRGANICHESKAYA KHIMIYA in Russian Vol 10, No 11, Nov 84  
(manuscript received 12 Apr 84) pp 1544-1551

PATON, Ye. B., VUDMASKA, M. I. and SVERDLOV\*, Ye. D., Institute of Molecular Biology and Genetics, Ukrainian SSR Academy of Sciences, Kiev; \*Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow

[Abstract] An E. coli DNA fragment containing the rpoB gene with a dominant mutation for rifampicin resistance, rpoB<sup>3</sup>, as well as genes rplJ and rplL (coding for the ribosomal proteins L7/L12 and L10, respectively), and the respective promoters, was cloned in vehicles designated as M13mp8 and M13WB2348 derived from the filamentous phase M13. Restriction studies and genetic analysis revealed that on cloning in both vehicles the DNA fragment is inserted in such a manner that the direction of transcription initiated by the promoters in the fragment coincides with the direction of transcription initiated by the lacUV5 promoter. In both cases the rifampicin resistance (600 µg/ml) imparted to E. coli 71-18 recipients by the recombinants was unstable. Figures 2; references 12: 1 Russian, 11 Western.  
[1641-12172]

UDC 615.917:569.1].015.4.07

MOLECULAR MECHANISMS OF DITHIOL ACTION

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 11, Nov 84  
(manuscript received 21 Feb 84) pp 75-84

TRINUS, F. P., BRAVER-CHERNOBUL'SKAYA, B. S., CHUBENKO, A. V., LUYK, A. I.  
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and Toxicology, Ukrainian SSR Ministry of Health; Institute of Physical  
Chemistry, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] A cursory survey is presented of the literature on the mechanism of action of various mercaptans when used as antidotes against arsenic and heavy metal toxicity, as well as in the modulation of adrenergic and cholinergic receptors. However, despite their clinical effectiveness, there appears to be no unambiguous correlation between the effectiveness of dithiols and their binding constants with metals. More recently, unithiol (Kiev Institute of Pharmacology and Toxicology) has been shown to be far more effective than BAL in protecting animals from arsenic because it both binds and accelerates excretion of arsenic, thereby limiting intracellular accumulation of arsenic. The effectiveness of unithiol, in distinction to BAL, is due to the fact that the erythrocyte membrane is virtually impermeable to unithiol, which is rapidly eliminated (thereby facilitating chelated-metal elimination). Studies on the role of S-S bonds in the survival of animals treated with reversible and irreversible cholinesterase inhibitors indicated that the various dithiols can behave variably. In intoxication with armin, an irreversible inhibitor, dithiothreitol was twice as effective as unithiol, atropine, or dipyroxime. However, administered in combination with either atropine or dipyroxime, dithiothreitol behaved as an antagonist (the degree of potentiation was equal to 0.7 and 0.3, respectively). Evidently, modulation of choline receptors by dithiothreitol decreases their sensitivity to acetylcholine and prevents their blockage by atropine. It also appears that dithiothreitol reacts directly with cholinesterase and dipyroxime to hinder enzyme reactivation. Although further work is required to understand completely the mechanism of action of the various dithiols, these preliminary studies underline the differences among them. The basic conclusion thus far is that changes in the redox potential may serve to modulate neuromuscular and neuronal transmission, in which SH groups and disulfide bonds of the synapses are intimately involved. The thiols, including dithiols, appear to modulate such processes. Figures 3; references 23: 17 Russian, 6 Western.  
[1651-12172]

## HYGIENIC STANDARDIZATION OF PLICTRAN CONTENT IN FOOD PRODUCTS

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 84 (manuscript received 13 Dec 83) pp 69-70

TATEVOSYAN, A. E. and ALEKSANYAN, D. S., Branch of All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics, Yerevan

[Abstract] Study of the effect of the acaricide plictran after application to grape vines, apple trees and cotton plants included study of a 25 percent wetting powder of the preparation after introduction, in an aqueous solution, into the empty stomach of experimental animals and study of the preparation's resorptive-toxic properties after cutaneous application of a 92 percent active substance in vegetable oil; study of toxic effects on warm-blooded animals of 1.5, 0.15 and 0.015 mg/kg doses in a 10-month chronic experiment; and studies of its effect on the mother and development of the fetus after daily doses of 0.25 mg/kg throughout pregnancy and 1.5 mg/kg in the critical period of pregnancy. Doses used did not have teratogenic nor embryotoxic effect nor produce mutagenic activity nor allergic reaction. Maximum permissible dose for man was set at 0.0075 mg/day. There were no residues left on grapes or apples 2 months after use of 2.4 kg of plictran/hectare. Cotton seeds contained 0.04 mg/kg of plictran 30 days after one-time processing by a 25 percent preparation and 0.076 mg/kg after use of a 60 percent concentrate of plictran. No residues were found in 3 months after use. Plictran is moderately stable with a half-decay period of 2 weeks. Plictran produced no unacceptable taste nor odor on apples or grapes after application. Food products grown with application of plictran underwent only slight changes of level of sugars and ascorbic acid in some crops in some seasons. Data obtained in the study were used to develop regulations for safe use of plictran. References 5: 4 Russian, 1 Western.  
[1643-2791]

UDC 612.822.3

## INFLUENCE OF ETHANOL ON INTERACTION OF HIPPOCAMPUS NEURONS IN TISSUE CULTURE

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian Vol 34, No 5, Sep-Oct 84 (manuscript received 25 Jul 83) pp 948-952

RUDNEV, Yu. L. and CHUBAKOV, A. R., Institute of Biological Physics, USSR Academy of Sciences, Pushcinio

[Abstract] A study is performed of the influence of ethanol on the interaction of hippocampus cells. Experiments were performed on an organotypical

hippocampus culture taken from 1 to 2-day-old rats and developing in vitro for 9 to 19 days. During the experiments only cases of recording of the activity of two closely located neurons simultaneously, differing in spike amplitude by a factor of at least 1.5-2, were selected. These pulse sequences were recorded on magnetic tape for subsequent statistical processing. The results indicate the possibility of presence of complex networks of neurons interconnected by functional synaptic connections even in a simple tissue culture. Ethanol is capable of changing the nature of mutual connections of the neurons, primarily weakening them. These influences may form the basis of various disruptions of coordination in the operation of brain structures observed in chronic alcohol intoxication. Figures 3, references 16: 5 Russian, 11 Western.  
[1617-6508]

UDC 615.332:577.182.36].033.36

#### REACTION OF RIFAMPICIN WITH HEPOCYTE ORGANOIDS OF RATS AND ITS INTRACELLULAR DISTRIBUTION

Moscow ANTIBIOTIKI in Russian Vol 29, No 11, Nov 84 (manuscript received 9 Feb 84) pp 826-828

GULYAYEV, A. Ye. and KIVMAN, G. Ya., Karaganda Medical Institute, Branch for Developing Prepared Medications, Scientific Research Institute for Biological Testing of Chemical Compounds, Moscow

[Abstract] Rifampicin has been shown to be extremely penetrating, and thus likely to accumulate within cells. Its ability to provide lasting antimicrobial protection is therefore of some interest. The present article reports on study of reactions with cellular organoids and distribution in order to adjust dosages for therapeutic and toxic impact. The livers of killed test white rats were homogenized, then separated to isolate nuclear, mitochondrial, microsomal and cytosolic fractions. Subsequent analysis showed that the most active fractions in bonding, the nuclei and mitochondria, absorbed essentially the same amounts of rifampicin, while the microsomal fraction absorbed markedly less. Cytosolic material lost 9.8% of its activity when in contact with rifampicin. Distribution throughout intracellular fractions was also found to be of crucial importance. Accumulation in the cytosol and possible deposits in cells, along with ready recovery of active properties, define the antimicrobial potential of the antibiotic for intracellular microorganisms. References 17: 10 Russian, 7 Western.  
[1657-12131]

UDC 615.33:577.182.24]015.2:615.281:547.551.525.211.1].033

PHARMACOKINETICS OF CEPHALORIDIN AND CEPHALOTIN COMBINATIONS WITH SULFALEN  
IN RABBITS

Moscow ANTIBIOTIKI in Russian Vol 29, No 11, Nov 84 (manuscript received  
19 Dec 83) pp 823-825

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Prepared Medications, Scientific Research Institute for Biological Testing  
of Chemical Compounds, Moscow

[Abstract] Previously it had been shown that, in the presence of sulfanilimides, the bonding of benzyl-penicillin and ampicillin with serum proteins led to reduced elimination of penicillin in rabbits. The present report gives the results of study of pharmacokinetics of cephaloridin and cephalotin when used in combination with sulfalen to treat rabbits. Balance dialysis was used to study bonding. A cellophane membrane was used with a solution in a phosphate buffer at pH of 7.4. Results indicated that bonding was reduced in all cases. The bi-exponential nature of kinetics was reflected in the mathematical model developed. Reduction of antibiotic excretion by the kidneys played a definite role in changed elimination of cephaloridin in the presence of sulfalen. Figures 2; references 2 (Russian).  
[1657-12131]

UDC 612.822.3+612.822.6+615.78

BIOELECTRIC ACTIVITY AND METABOLISM OF INDIVIDUAL BRAIN STRUCTURES AT VARIOUS  
TIMES AFTER ADMINISTRATION OF SYNTHETIC TETRAPEPTIDE AMIDE (TPA)

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 (manuscript received 13 Oct 83) pp 926-931

PAPOVA, N. S., DOVEDOVA, Ye. L., Institute of the Brain, All-Union Scientific  
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[Abstract] Certain physiological and biochemical effects of neuropeptides may be manifested weeks after 1-time administration. TPA, a simple analog of the enkephalins, changes motor activity, decreasing muscle tone for several weeks or even months. This article continues to study the effect of TPA on metabolism and bioelectric activity of brain structures as well as the behavior of animals at various times after its administration. Experiments were performed on 20 animals (rabbits and dogs) before and after i/m administration of 500 µg/kg TPA. EEG's were recorded and biochemical studies were performed in the cortex and caudate nuclei. Long-term (several days) specific influence of the opioid on metabolism and neurophysiological processes was observed in various areas of the cerebral cortex, manifested as changes

in mediator metabolism, background bioelectric activity and EEG reactions of the brain structures studied to adequate afferent stimuli. The duration of these effects is significantly greater than the duration of the anesthetic effect of TPA. Figures 2, references 17: 10 Russian, 7 Western.  
[1617-6508]

#### ELEUTHEROCOCCUS ROOT

Moscow MEDITSINSKAYA GAZETA in Russian 30 Nov 84 p 4

MAKAROV, V., MEDITSINSKAYA GAZETA correspondent, Vladivostok-Ussuriysk

[Abstract] Among the many health products derived from plants in the Soviet Far East, special attention has always been accorded to eleutherococcus extracts. However, such extracts are not always convenient to take. Recently, convenient sugar cubes have been developed which contain 0.5 mg of eleutherococcus. Drinking tea sweetened with such cubes has been shown to improve performance, while regular use has been demonstrated to be effective in the prevention of disease during the "cold" seasons. This product has been enthusiastically received by various workers, ranging from miners to cosmonauts, and has undergone testing in Vorkuta, Norilsk, Togliatti and other cities and regions. It represents a significant achievement of the Primorskiy Combine, imeni N. I. Kalinin, and its laboratories are actively pursuing other useful products.  
[1673-12172]

UDC 579.861.1.04:615.281.07

#### CHANGE IN BIOLOGICAL PROPERTIES OF STAPHYLOCOCCUS AUREUS UNDER THE INFLUENCE OF DIOXIDINE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 24 Oct 83) pp 104-105

FADEYEVA, N. I., DEGTYAREVA, I. N., PROKHOROV, V. Ya. and PERSHIN, G. N.,  
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[Abstract] This article is an author-prepared report of their continued studies of the mechanism of action of dioxidine (2,3-dioxymethylquinoxaline-1,4-di-N-oxide), an original chemotherapeutic preparation for treatment of bacterial infections. The preparation is effective for microorganisms including the greatest number of antibiotic-resistant strains, particularly polyresistant staphylococcus, bacillus pyocyaneus and proteus. The work explains the role of inhibition of extracellular nuclease by dioxidine for

the manifestation of its biological activity, particularly its action on virulence and production of  $\alpha$  toxin in *S. aureus*. The results obtained indicate that inhibition of nuclease is performed apparently by action of dioxidine on the enzyme itself, not on processes of regulation of its biosynthesis. The data thus indicate that dioxidine suppresses the activity of extracellular nuclease, accompanied by inhibition of the production of  $\alpha$  toxin and a decrease in virulence of staphylococcus.  
[1608-6508]

UDC 615.214.038

### 3-HYDROXYPYRIDINE DERIVATIVES: NEW CLASS OF PSYCHOTROPIC AGENTS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 11, Nov 84  
(manuscript received 21 Feb 84) pp 3-7

BYUMAYEV, K. M., VORONINA, T. A., SMIRNOV, L. D. and VAL'DMAN, A. V.,  
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[Abstract] Recent years have seen the development of 3-hydroxypyridine (3HP) derivatives as low-toxicity, water-soluble antioxidants with membrane-protective properties and an extensive spectrum of biological activity. A review of recent research carried out on mice at the Institute of Pharmacology of the USSR Academy of Medical Sciences has revealed an additional spectrum of activity with respect to the nervous system. Administered in doses of 50-100 mg/kg 3HP derivatives potentiate the actions of soporifics and anticonvulsive agents; in doses of 150-250 mg/kg they inhibit motor activity, and at a level of 350-500 mg/kg induce neurological deficits in addition to the other effects. LD<sub>50</sub> values for the different 3HP congeners range from 300 to 1000 mg/kg. The antiradical properties of the derivatives are enhanced by the introduction of alkyl groups at positions 2 and 6 of the pyridine ring. These agents have also been shown to possess marked anti-hypoxic effects in doses of 50-200 mg/kg in terms of survival times. The primary psychotropic effects can be described as anxiolytic and antistress and, in conjunction with the previously noted properties, the 3HP derivatives appear to constitute a new class of such agents. Figure 1; references 7 (Russian).  
[1651-12172]

## PHYSICAL-CHEMICAL APPROACHES IN SEARCH OF PHARMACOLOGICALLY ACTIVE POLYFUNCTIONAL MACROHETEROCYCLIC COMPOUNDS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 11, Nov 84  
(manuscript received 21 Feb 84) pp 8-12

BOGATSKIY, A. V. (deceased), NAZAROV, Ye. I., GOLOVENKO, N. YA. and  
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of Sciences, Odessa

[Abstract] A review is presented of recent studies on the biological activities of macroheterocyclic compounds and the physical-chemical rationale employed in the search of such compounds with potential clinical usefulness. To date, macroheterocyclic compounds have been identified which have antiarrhythmic, antineoplastic, immunomodulating and antimicrobial activities. The compounds in question include depsipeptides, nigericin antibiotics, and certain types of crown ethers, with a common mechanism of action involving cation transport across biological membranes along the electrochemical potential gradient. A survey of the experimental and literature data suggests that the crown ethers and chelating agents may constitute a new source of clinically useful chemotherapeutic agents. Figures 3; references 20: 9 Russian, 11 Western.  
[1651-12172]

UDC 615.214:547.891.2].015.4.07

## BENZODIAZEPINES: RECEPTOR AFFINITY, ENDOGENOUS LIGANDS OF THEM AND MODELING STUDIES ON NEW PSYCHOTROPIC AGENTS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 11, Nov 84  
(manuscript received 21 Feb 84) pp 13-20

VORONINA, T. A., ANDRONATI, S. A., AKHUNDOV, R. A. and CHEPELEV, V. M.,  
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[Abstract] A review, consisting of published data and recent experimental findings at the Institute of Pharmacology of the USSR Academy of Medical Sciences, is presented on the interaction of benzodiazepines and their congeners with benzodiazepine receptors in the CNS. Included in the discussion are data on putative endogenous ligands which interact with the receptors, such as GABA-modulin, various peptides and proteins, purines, nicotinamide, beta-carbolines, etc. In addition, binding data are also presented on various synthetic congeners of individual benzodiazepines in a search for novel agonists and antagonists. The data are summarized in terms of molecular structure and electronic characteristics of the various derivatives as

they influence binding and inhibition. Combination of such data with *in vivo* experiments on mice has led to identification of parameters that can be used in modeling new agents with desired properties. In addition, new properties have been identified in the congeners of benzodiazepines and their natural analogs (nicotinamide, GABA), such as antihypoxic and anticonvulsive effects. A successful combination of binding data, *in vivo* studies, and theoretical analysis can considerably expand the available pharmacological armamentarium. Figure 1; references 31: 15 Russian, 16 Western.  
[1651-12172]

UDC 615.2/.3.015.44.07

#### CURRENT TRENDS IN TARGETED SEARCH FOR MEMBRANE-ACTIVE COMPOUNDS AND PHARMACOLOGICAL CONGENERS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 11, Nov 84  
pp 89-94.

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[Abstract] One of the more important trends in modern molecular pharmacology is concerned with elucidation of drug-membrane interactions, in view of the importance of such mechanisms in the biological effectiveness of a number of psychotropic and cardiovascular agents with clinical usefulness. The present review is specifically concerned with the antioxidants, particularly the various phenols, synthetic analogs of tocopherol and derivatives of 1,4-dihydropyridine, and 3-hydroxypyridine and its congeners. Analysis of the available data on the first three antioxidants show that they hold considerable promise for therapeutically effective agents. In many respects, the 3-hydroxypyridine derivatives appear to hold an edge over the other compounds as a source of useful drugs, since they are among the simplest of the nitrogenous heterocyclic phenols, and yet can be regarded as structural analogs of vitamin B6. In addition, they offer the advantages of ready solubility in biological fluids, have been found to function as antihypoxic agents, and are potent inhibitors of lipid peroxidation. Their membrane-protective effects are presumably exerted via inhibition of lipid peroxidation, a function that may also be related to their modulation of the activities of membrane-bound enzymes. References 50: 37 Russian, 13 Western.  
[1651-12172]

## ELEUTHEROCOCCI: CHEMICAL NATURE, ACTIVITY AND APPLICATION

Moscow VETERINARIYA in Russian No 10, Oct 84 pp 61-63

FILOZOPENKO, L. I., Primorskiy Kray

[Abstract] Eleutherococcus senticosus Maxim is a shrub-like plant from the ginseng family. It grows in the forests of the Far East. All of its parts are used in animal breeding and veterinary medicine: roots, leaves and twigs, either ground into powder or extracted. Chemical composition of the active agent has not been totally established as yet. Eleutherococci preparations are classified as adaptogenes--compounds increasing the resistance of organisms to environmental trauma. They also act as an anabolic agent. In this paper literature data (referenced only in a very general sense) were reviewed stressing the positive effects of anabolic, gonadotropic, lactating and antistress effects of eleutherococcal preparations.  
[1599-7813]

UDC 619:615.92:636.51

## KELTAN TOXICITY IN CHICKENS

Moscow VETERINARIYA in Russian No 10, Oct 84 pp 64-65

LYKASOVA, I. A. (Scientific Director Prof. M. I. Rabinovich), Troitskiy Veterinary Institute

[Abstract] Keltan (I) is a chloroorganic pesticide used widely as a contact acaricide against plant ticks. It is a medium toxic agent with skin resorptive and cumulative properties. In the present work, toxicity of acute and chronic exposures of chicken to this agent was evaluated on leghorns weighing 1.3-1.5 kg using a 20% emulsion of I. In single applications, I appeared to be a weakly toxic agent; its sublethal dose was 4000 mg/kg, LD<sub>50</sub>--4365 mg/kg and the lethal dose--5000 mg/kg of the body weight. Cumulation coefficient for daily administration of 1/10 of LD<sub>50</sub> was 1.92. Chronic intoxication symptoms appeared between 10-20 days of the exposure, mostly of the CNS type and as gastrointestinal disorders. In both cases the hemoglobin content in the blood increased along with the number of erythrocytes; liver protein-forming function was affected as well as bioelectric function of the heart. In all toxic cases keltan residue was found in various organs and tissues.  
[1599-7813]

INTEGRATION OF BRAIN SOLUBLE TETRODOTOXIN-SENSITIVE PROTEINS AND LIPOSOMAL MEMBRANE

Kiev NEYROFIZIOLOGIYA in Russian Vol 16, No 5, Sep-Oct 84  
(manuscript received 6 Jun 84) pp 716-725

MALYSHEVA, M. K., LISHKO, V. K., ZHUKAREVA, V. A. and LYSENKO, V. V.,  
Institute of Physiology imeni A. A. Bogomolets, UkSSR Academy of Sciences,  
Kiev; Institute of Biochemistry imeni A. V. Palladin, UkSSR Academy  
of Sciences, Kiev

[Abstract] Specific features of interaction of tetrodotoxin-sensitive proteins of the soluble cytoplasmic fraction of mammal brain with liposomes and the capacity of these proteins to be incorporated into liposomes via the membrane were studied and discussed. It was found that transmembrane oriented incorporation of tetrodotoxin-sensitive proteins into liposomes depends on the chemical composition of their lipids. Figures 11, references 23: 4 Russian, 19 Western.  
[158-2791]

UDC 612.822.3+612.822.6

FUNCTIONAL INTEGRATION OF RAT NERVE TISSUE UPON XENOTRANSPLANTATION  
INTO RABBIT BRAIN

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 (manuscript received 30 Jan 84) pp 932-940

KICHIGINA, V. F., BRAGIN, A. G. and VINOGRADOVA, O. S., Institute of  
Biological Physics, USSR Academy of Sciences, Pushchino

[Abstract] An analysis is presented of the spontaneous and evoked activity of rat nerve tissue cells transplanted into rabbit brain. The donors were Wistar rat embryos at 16 to 17 days age. 1-2 mm<sup>3</sup> sections were extracted from the folds of the septum and hippocampus and implanted in a 5 mm cavity on the surface of the rostral hippocampus of adult rabbits. Neuronal activity was studied under chronic conditions with implanted electrodes 2 to 3 months later with the rabbits awake, movement slightly restricted in a special box. The neurons were found to have normal spontaneous activity with no signs of pathology. Stimulation of various brain structures caused changes in the activity of the transplantate neurons. The transplanted neurons were highly reactive to sensory stimulus in the recipient animals. Figures 3, references 21: 5 Russian, 16 Western.  
[1617-6508]

CLINICAL-PHYSIOLOGICAL PRINCIPLES OF NEW METHOD OF RECOVERING VISION THROUGH  
DIRECT ELECTRICAL STIMULATION OF DAMAGED HUMAN VISUAL NERVES

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 29 Apr 83) pp 719-746

SHANDURINA, A. N., KHIL'KO, V. A., BEKHTEREVA, N. P., LYSKOV, Ye. B.,  
MATVEYEV, Yu. K., PANIN, A. V. and NIKOL'SKIY, A. V., Institute of Experimental Medicine, USSR Academy of Medical Sciences

[Abstract] The task of this work was to provide a neurophysiological basis and summarize the results of clinical testing of a new method of restoring the functioning of damaged visual nerves by direct electrical stimulation through implanted electrodes. Studies were performed at the S. M. Kirov Military-Medical Academy on 22 patients ranging from 15 to 55 years of age. In all the patients, pathological processes such as tumors, optico-chiasmal arachnoiditis or trauma had compressed the visual nerve and caused severe damage unilaterally or bilaterally. Bipolar gold electrodes were implanted subepineurally in the section of the nerve apparently least damaged after removing the pathologic formations which were compressing the visual nerve. The gold wires were brought out to the surface in the frontal-temporal area and soldered to plastic connectors. Visual nerve activity was then recorded on a 16 channel electroencephalograph at rest, with eyes open and closed and during rhythmic photostimulation as well as before, during and after electrostimulation of the visual nerves. The method of direct electrostimulation of visual nerves through implanted electrodes was found to be effective and reliable for restoration of vision. The combination of electrostimulation and synchronous photostimulation of the eyes with subsequent isolated sessions of photostimulation was found to be desirable. The probable mechanism of restoration of vision is activation of the neuromediator systems of the damaged visual nerves, improvement of conditions of blood circulation and metabolism in the nerves, as well as compensatory intracerebral restructuring in cerebral structures. Figures 9, references 61: 41 Russian, 20 Western. [119-6508]

# SOME ELECTROPHYSIOLOGICAL INDICES OF DYNAMICS OF CORTICAL PROCESSES DURING PERFORMANCE OF AMBIGUOUS IMAGE SELECTION TASKS

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 28 Jan 84) pp 707-712

KOGAN, A. B. and KOGAN, Ye. A., Scientific Research Institute of Neurocybernetics, Rostov State University imeni M. A. Syslov, Rostov-on-Don

[Abstract] Ten university students were given the task of recognizing ambiguous images while EEG's were recorded. Frequency-amplitude analysis of EEG showed that, in all leads, when images were presented, a definite desynchronization reaction occurred, the frequency spectrum shifted from  $\alpha$  rhythm to  $\beta$  rhythm. The most general manifestation of changes in electrical activity during problem solving was an increase in the number of connections between oscillations of potentials in different leads. In most cases, connections with the occipital area were most strongly activated, this area interacting with the parietal and frontal areas, possibly reflecting the specifics of the task of visual examination of ambiguous figures. Some of the electrophysiological indices of the dynamics of cortical processes are thus revealed, though greatly masked by nonspecific reactions. Further studies of this type of connections between cortical structures should expand information on the organization of their joint activity and represent one approach to understanding of the neurophysiological mechanisms which form the basis of thought. Figures 4; references 15: 11 Russian, 4 Western. [119-6508]

# TIME RELATIONSHIPS OF SIMPLE AND COMPLEX CHARACTERISTICS DESCRIBING A VISUAL PATTERN

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 20 Jan 84) pp 713-718

GLEZER, V. D. and BORISOVA, Ye. D., Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences, Leningrad

[Abstract] A study was made of the time structure of recognition of patterns differing in the degree of filtration of spatial frequencies as well as time relationship of simple and complex characteristics. A digital computer was used to perform spatial filtration, after which the highest spatial frequencies in the spectrum were no higher than a strictly defined limit, though the rest of the spectrum was not distorted. The filtered images were perceived by observers as "blurred" to some extent. The probability of proper

recognition of patterns with various values of limiting spatial frequency was determined by a tachystoscopic method with various angular sizes of the pattern displayed. It was found that with unlimited time, patterns could be recognized when an image contained two to five harmonics. The greater the number of higher frequencies participating in the recognition process, the more slowly the recognition decision was made. Spectral analysis of the time course of the recognition process confirms that simple characteristics are formed of space-frequency channels. Gradually developing complex characteristics are formed of all space-frequency channels which have been formed by a given moment in time. Figures 2; references 13: 10 Russian, 3 Western. [119-6508]

UDC 612.823

#### CONTROL OF HUMAN FUNCTIONAL STATUS

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 25 Feb 84) pp 761-770

MEDVEDEV, V. I. and MIROLYUBOV, A. V., Military-Medical Academy imeni S. M. Kirov, Leningrad

[Abstract] The problem of controlling the functional status of the human mind can be divided into several sections: acting upon the strength and closeness of existing correlations; acting on the capability of structures to form new correlations, establishment of new correlations not included in the cerebral activity program, which is taken to mean the formalized sequence of reactions in space and time directed toward achievement of some goal and encoded in cerebral structures; alteration of the sign of a connection forming part of a correlation; and attachment of new structures to existing correlations. Experimental data are used to confirm these theoretical concepts, showing that the formation of new connections for correlations is among the most powerful and promising means of controlling the human cerebral functional status in order to eliminate pathologic processes and encourage mentally healthy processes. References 8 (Russian). [119-6508]

# INFORMATIONAL PATHOLOGY OF BEHAVIOR AND SOME MECHANISMS OF SELF-REGULATION OF HIGHER NERVOUS ACTIVITY

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 4 Apr 84) pp 778-785

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[Abstract] Informational pathology of behavior is defined as disorders of higher nervous functions as well as disorders of other systems of the body moderated by higher nervous functions arising after the brain exists for long periods of time in conditions of an unfavorable combination of three factors: 1) volume of information which must be processed in order to make important decisions; 2) the time factor allowed for decision making; and 3) the level of motivation, defining the significance of the information and the need to process it. Studies have established that informational pathology of higher nervous activity is accompanied by ultrastructural changes and restructuring of a number of neuron organelles and synapses in the neocortex. These changes obviously are intended to compensate the external manifestations of the pathology which are detected at the behavioral level. There are conditions which favor the development of such pathology, including hypodynamia characteristic of many modern occupations, as well as a number of other conditions of life inherent in the era of scientific and technical progress. It is time to recognize a new disease with a standard etiology, characteristic factors reducing sensitivity of the body to the etiology, characteristic compensatory processes and clinical manifestations. References 6 (Russian). [119-6508]

# ANALYSIS OF CHANGES IN NEURON DISCHARGE FREQUENCY IN HUMAN BRAIN DURING ONE-TIME PERFORMANCE OF PSYCHOLOGICAL TESTS

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 29 Jun 83) pp 796-812

GOGOLITSYN, Yu. L. and PAKHOMOV, S. V., Institute of Experimental Medicine,  
USSR Academy of Medical Sciences, Leningrad

[Abstract] An approach is suggested to analysis of the reactions of neurons and neuron populations in the human brain as manifested in changes of discharge frequency during one-time performance of psychological tests. Analysis of the activity of more than 80 neuron populations showed that performance of psychological tests was accompanied by changes in the discharge

frequency in many cerebral structures, which were arbitrarily considered physical. The patterns of frequency changes in individual samples were divided into components. In addition to rigid connections, in which the patterns of activity were highly reproducible in individual tests, flexible connections were also found, populations in which reactions may differ greatly from test to test. Intermediate types were also observed. The results obtained by breaking down the patterns of activity into components can be considered evidence against the assumption of constancy of reactions upon repeated presentation of a stimulus. Figures 11; references 24: 14 Russian, 10 Western.  
[119-6508]

UDC 612.852-50

MATHEMATICAL MODELING OF MECHANISM OF SIGNAL PROCESSING BY NEURON POPULATIONS IN BRAIN. PART III. STUDY OF EVOKED REACTIONS OF NEURON ENSEMBLES

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 4 Jan 83) pp 813-821

KROPOTOV, Yu. D. and PAKHOMOV, S. V., Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad

[Abstract] Studies of the evoked reactions of neuron populations in patients with implanted electrodes during recognition of visual patterns have shown that there are two components in the response to visual stimuli in neuron populations of the posterior ventral, posterior lateral nuclei and medial visual cortex, as well as the corpus callosum of Parkinsonism and epilepsy patients--a short-latent component and a long-latent component. The cellular mechanism leading to generation of the long-latent component is known. This article studies the dynamics of pulse activity in brain neuron ensemble models, analyzes cooperative effects and studies the influence of nonlinear properties of synaptic transmission on the nature of neuron network evoked reactions. The behavior of an ensemble of nerve cells excited by an external stimulus and surrounded by neurons with little activity, arising due to lateral inhibition, is modeled. Interconnection of neurons into an ensemble by connections which do not change with time has the effect of increasing the response in terms of discharge frequency of the neurons to a given external stimulus. Changing the effectiveness of the connections slightly can result in significant changes in amplitude of the reactions of neuron populations with constant internal connections. Neuron populations with constant internal connections have inertia in their response. Neuron networks with variable internal connections have qualitatively new properties, superior in the neurophysiological sense to other types of networks. Figures 5; references 10: 7 Russian, 3 Western.  
[119-6508]

LOCAL TYPICAL ZETA-WAVE CHANGES IN HUMAN BRAIN DURING STUDY OF ATTENTION  
ACTIVATION PROCESSES

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84  
(manuscript received 20 Mar 84) pp 829-840

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[Abstract] A study was made of the dynamics of superslow physiological processes with periods of up to 2-4 to 15 seconds (zeta-waves), recorded in the deep structures of the brain and from the surface of the head upon activation of voluntary and involuntary attention. The zeta-waves in the deep structures were recorded with long-term implanted gold electrodes. Repeated studies with four Parkinsonism patients as they received verbal stimuli and performed psychological and motor tests revealed reproducible zeta-wave dynamics as one-phase, or less frequently as two-phase potential oscillations. Zeta-wave dynamics recorded at the surface of the head were also reproducible during activation of involuntary attention. One possible definition of the physiological significance of the superlow zeta-wave potential oscillations is that they play a key role in supporting input of information into the memory matrix. The reproducible dynamics observed in the study may be considered the equivalent of local neurodynamics at the level of the very slow control system of the brain, reflecting the initial phase of switching on the memory matrix activation mechanism. Figures 3; references 52: 37 Russian, 15 Western.  
[119-6508]

## MONOGRAPH ON LOCALIZATION OF MOVING SOUND SOURCE

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84, pp 870-871

ALEKSEYENKO, N. Yu., Reviewer

[Abstract] This article is a review of the monograph by Ya. A. Alt'man: "LOKALIZATSIYA DVIZHUSHCHEGOSYA ISTOCHNIKA ZVUKA," Leningrad, Nauka Press, 1983, 176 pages. Over the past 15 years, Alt'man and his colleagues have accumulated a tremendous amount of material from cytophysiological and neurophysiological experiments, important for an understanding of the mechanism of the function of localizing a sound source on the basis of differences in arrival times of sounds in the two ears. This monograph summarizes and discusses the information obtained over the past 15 years, which has been published in a large number of journal articles. The author has studied the ability to localize nonmoving and moving sources of sound during temporary

disruption of the activity of one hemisphere of the brain due to monolateral electroconvulsive attacks evoked by shock therapy. Patients with focal damage to the temporal area of the brain have also been studied. Studies on cats have revealed the presence of neurons which detect movement of sound as well as specialized detectors for the direction, speed and trajectory of motion. The monograph is given a positive evaluation. This issue of FIZ. CHELOVEKA also gives the monograph a positive review by Yu. D. Kropotov. [119-6508]

#### MONOGRAPH ON LOCALIZATION OF A MOVING SOUND SOURCE

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 10, No 5, Sep-Oct 84 pp 871-872

KROPOTOV, Yu. D., Reviewer

[Abstract] This article is a review of the monograph by Ya. A. Alt'man: "LOKALIZATSIYA DVIZHUSHCHEGOSYA ISTOCHNIKA ZVUKA," Leningrad, Nauka Press, 1983, 176 pages. The monograph carefully analyzes data obtained by the author and his colleagues, as well as the results of studies performed in other laboratories in the USSR and abroad, concerning the problem mentioned in the title. It gives the reader a complete idea of the status of the problem, what has been done and what still needs to be done. The first three chapters present an analysis of the results of psychoacoustical studies performed primarily on healthy volunteers. Chapter 4 analyzes the patterns of perception of nonmoving and moving sound sources following disruption of the activity of various brain segments, describing experiments on the influence of damage to various brain structures in animals on the hearing function, as well as data from clinical studies following unilateral disruption of the activity of the hemispheres in cases of focal brain damage in humans. Chapters 5 and 6 discuss studies of the evoked reactions of neurons in various segments of the brains of animals in response to sound stimulation. It is pointed out that as information is transmitted from the lower segments of the auditory system to the higher segments the reaction of the neurons becomes more specific. The book addresses the following question: in what manner, based on the physical characteristics of a sound stimulus, is the decision made concerning the significance of a stimulus? The question is not directly answered in the book. Studies in this area are just beginning, though successes have been achieved. This issue of FIZ. CHELOVEKA also gives the monograph a positive view by N. Yu. Alekseyenko. [119-6508]

## INFLUENCE OF VERBAL REINFORCEMENT ON EVOKED CORTICAL ACTIVITY

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 (manuscript received 16 Dec 83) pp 833-840

KOSTANDOV, E. A., VAZHNova, T. N., GENKINA, O. A., ZAKHAROVA, N. N.,  
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[Abstract] The P<sub>300</sub> wave was recorded as test subjects performing tasks were given positive and negative verbal reinforcement by the experimenter. The same wave was recorded in response to visual nonverbal stimulus presented several seconds after the verbal reinforcement. Recordings of evoked cortical activity with verbal reinforcement included artifacts resulting from movement of the eyes in 3/4 of cases. No significant differences in latent period or magnitude of P<sub>300</sub> wave in response to positive and negative verbal reinforcement were found. Following negative reinforcement there was a decrease in the amplitude of the P<sub>300</sub> wave in response to a standard stimulus, a smaller increase in response to test stimulus. As the test progressed, the latent period of the P<sub>300</sub> wave in response to the test stimulus decreased. Formation and reinforcement of feedback by means of verbal reinforcement was found to be one of the nervous mechanisms used to learn to estimate short time intervals, the requirement of the test used. Figures 2; references 12:

1 Russian, 11 Western.

[1617-6508]

## INFLUENCE OF SPATIAL FREQUENCY OF SINUSOIDAL GRATINGS ON AMPLITUDE-TIME PARAMETERS OF HUMAN VISUAL EVOKED POTENTIALS

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 (manuscript received 23 May 83) pp 848-854

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Sciences, Moscow; Institute of Physiology imeni I. P. Pavlov, USSR Academy  
of Sciences, Leningrad

[Abstract] A study is reported of how mechanisms participating in spatial frequency processing of signals are reflected in the configuration of evoked potentials. This is of particular interest in association with the hypothesis that there are independent space-frequency channels in the human visual system, which presupposes the possibility of selective activation of mechanisms which form the basis of visual perception. Evoked potentials were recorded in response to presentation of gratings of various spatial frequencies

(0.5 to 15 cycles per degree) for 100 ms, repetition frequency 1/s. Changes in spatial frequency of the gratings resulted in regular shifts in time and amplitude characteristics of evoked potentials. The N<sub>95-130</sub> and P<sub>120-190</sub> components dominated in the complex of waves which made up the evoked potentials recorded in the O<sub>2</sub> area of the test subjects. An increase in spatial frequency led to a reliable increase in the amplitude of the relatively early and a decrease in amplitude of late complexes of the evoked potentials. The amplitude-time characteristics of evoked potentials reflect the inclusion of independent mechanisms with different locations in the visual cortex for processing information on low and high spatial frequencies. Figures 5; references 25: 9 Russian, 16 Western.  
[1617-6508]

UDC 612.821.6+612.821.77

FORMATION AND DEVELOPMENT OF TEMPORARY CONNECTIONS INVOLVING NONPERCEIVED AND PERCEIVED SOUND STIMULI

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian Vol 34, No 5, Sep-Oct 84 (manuscript received 26 Oct 83) pp 855-860

VORONIN, L. G., NOVIKOV, P. P., VOLKOV, Ye. V. and DUBYNIN, V. A., Department of Physiology of Higher Nervous Activity, Moscow State University imeni M. V. Lomonosov

[Abstract] The problem of nonperceived or subthreshold signals and their significance in the coding and processing of information by the nervous system was studied on 15 subjects, 12 males and 3 females, 20 to 25 years of age. A 500 Hz tone was transmitted through earphones along with a background of near white noise to mask the 500 Hz tone. EEG's were recorded during a 50-60 minute experiment in which test subjects attempted to respond to signals just below and just above the threshold of conscious perception. The electrographic components appeared in response to the nonperceived signals only after 6 to 10 presentations, then remained clearly expressed even after 60 presentations of the stimulus. Asymmetry in depression of background rhythm and its predominance in the left hemisphere during performance of conditioned reflex response indicate the formation of temporary connections in response to both perceived and nonperceived stimulus. Connections were formed more slowly in response to nonperceived stimulus, only after 30 to 40 presentations. Processes of formation of reactions to perceived and nonperceived stimulus were found to be relatively independent. Figure 1; references 14: 11 Russian, 3 Western.  
[1617-6508]

UDC 612.82/.83+612.821+612.822.6+615.78

INFLUENCE OF ENDOGENOUS OLIGOPEPTIDES AND BRAIN-SPECIFIC PROTEINS ON  
AGGRESSIVE BEHAVIOR OF RATS

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 (manuscript received 29 Nov 83) pp 904-910

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[Abstract] A study is presented of the influence of the brain-specific protein S-100, antiserum to this protein and endogenous oligopeptides angiotensin and bradykinin on the aggressive behavior of rats. The study involved S-100 (main fraction and gamma-globulin fraction obtained from the serum of rabbits immunized with S-100 proteins). Male white rats received a dose of 0.02 mg S-100, 50 ng angiotensin and bradykinin one time in 20  $\mu$ l saline solution intracerebrally under ether narcosis. Various forms of aggressive behavior were tested each day for 10 days before injection of the substances, then beginning again the second day after injection. Injection of S-100 decreased aggressiveness among males and aggressiveness related to pain and had a phased inhibiting influence on emotional reactivity of the animals. Administration of the gamma-globulin fraction from rabbits immunized with S-100 proteins increased aggressiveness related to pain, had no influence on aggressiveness among males and showed a phased increase in emotional reactivity. Injection of the serum of nonimmunized rabbits, angiotensin and bradykinin caused no changes in the aggression studied. None of the substances influenced the level of predatory aggressiveness of the rats. Figures 2; references 25: 8 Russian, 17 Western.  
[1617-6508]

UDC 612.85+612.825.55

INFLUENCE OF PROPIOCEPTIVE AND VISUAL STIMULATION ON AUDITORY EVOKED  
POTENTIALS IN BRAIN STEM OF CAT AND MAN

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 (manuscript received 19 Oct 83) pp 920-925

ALEKSEYENKO, N. Yu., VANETSIAN, G. L., KAMENKOVICH, V. M. and SHARAYEV, G. A.,  
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of Sciences, Moscow

[Abstract] Auditory evoked potentials were recorded at six levels along the auditory path by computer analysis of many responses recorded by surface electrodes on the brain stem, with signals from the different segments being

differentiated by latent period. Experiments on cats utilized 6 needles embedded in the skull at the vertex with a separation of 2 mm. In all experiments a proprioceptive influence on auditory evoked potentials in the brain stem was observed upon rotation of the skull. The cervical proprioceptors converging on various nuclei of the auditory system were found to have separate and different influences on them, interacting various combinations as a function of head rotation angle. The lack of correlation of changes in latent periods of auditory evoked potentials in the brain stem with changes in amplitude indicate that it is not the excitability of auditory system elements which is changed, but rather the path of activity. Proprioceptive and light factors influence the evoked potential in the same manner, indicating that the nature of the influence does not vary with the specifics of stimulation but rather the participation of common factors. The development of changes in evoked potentials at the level of the cochlear nuclei is explained by arrival of heteromodal influences through higher levels of the auditory system. Complex activity of the descending auditory paths is apparently significant in the effects observed. Figures 4; references 20: 6 Russian, 14 Western.

[1617-6508]

UDC 612.178

#### EFFECTS OF RNA ON M-CHOLINORECEPTORS OF FROG MYOCARDIUM

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 279, No 1, Nov 84  
(manuscript received 12 Jul 84) pp 250-252

TURPAYEV, T. M., corresponding member, USSR Academy of Sciences, and  
SOLOMONOVA, V. G., Institute of Developmental Biology imeni N. K. Kol'tsov,  
USSR Academy of Sciences, Moscow

[Abstract] With the demonstration of the nucleoprotein nature of the muscarinic choline receptors, experiments were undertaken to evaluate the various factors that may have a regulatory function on the receptors. Studies with isolated frog (*Rana temporaria*) ventricles in Ringer's solution led to the demonstration that RNAase and RNAase activators (N-nitroso-N-methylurea, N-nitroso-N-ethylurea) depress m-cholinoreceptor responsiveness to acetylcholine, while an RNAase inhibitor (polyvinyl sulfate) enhanced responsiveness. In addition, pretreatment of the myocardium with polyvinyl sulfate abolished the inhibitory effects of subsequent RNAase addition. Perfusion of the preparation with RNA solution enhanced the susceptibility of the myocardium to acetylcholine. These observations demonstrate that RNA is involved in the regulation of m-cholinoreceptor function, and that many endogenous factors (e.g., ATP, UTP, GTP) may also exert regulatory effects via the nucleic component of the muscarinic receptor. Figures 4; references 11 (Russian).

[1615-12172]

## PUBLIC HEALTH

### CURRENT PROBLEMS IN IMPROVING PROFESSIONAL QUALIFICATIONS OF PEDIATRICIANS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 10, Oct 84 pp 9-12

DAVIDOVSKIY, L. Ya. and IL'YASOVA, R. N., Chair of Pediatrics, Alma-Ata Institute for the Advanced Training of Physicians, USSR Ministry of Health

[Abstract] While general problems pertaining to the supply and training of pediatricians in Kazakhstan have been solved, current attention is focused on maintaining and improving professional competence. A questionnaire survey conducted on 303 pediatricians in Kazakhstan undergoing training under the auspices of programs offered by the Alma-Ata Institute for the Advanced Training of Physicians has revealed some problem areas. The study, conducted in the period 1982-1983, showed that a third of the pediatricians could not name a medical book they had read in the last two years. Only 33.9% of the subjects reported using medical libraries, 39% borrow medical books from friends, and only 12.2% received medical books by subscription. In addition, 56.6% of the physicians reported that it is very difficult to acquire medical books. The questionnaire also revealed that less than half of the pediatricians (43.7%) had good comprehension of what they read in the medical literature. A third reported some difficulty in understanding the text; of recent graduates (less than 5 years out of school), only half could read medical literature without difficulty of understanding. These results indicate that a serious effort must be undertaken to educate and instill a desire for lifelong learning in the pediatricians of the Kazakh SSR, and to improve the availability of medical books.

[1652-12172]

### BOGUS PRESCRIPTIONS

Leningrad VECHERNIY LENINGRAD in Russian 29 Aug 84 p 2

KOLESNIKOVA, G.

[Abstract] Recently, an attache case was found at one of the special educational institutions which was full of blank medical documents and forms, as well as prescription forms. All were stamped with institutional and physicians' stamps and obviously were intended for illegal use, simply by filling

in patients' names, dates and/or drugs desired. The problem of illegal medical [work release] leaves and compensation is a growing one, and most falsified prescriptions are used to obtain expensive drugs that are in short supply. In the first half of 1984, approximately 30% of all prescriptions presented for filling in Leningrad were counterfeit, with the vast majority coming from prescription pads of the polyclinics in the Petrograd and Smol'ninskiy Rayons. Equally disconcerting is the attitude of the medical personnel at the clinics from which such documents have been purloined and which bear their stamps. It is one of a simple lack of concern and the common explanation that such forms are out of date. It is high time to take rigorous measures to control the illegal use of medical documentation, and to alert all health workers to the seriousness of the problem.  
[173-12172]

UDC 616.12-008.331.1-057:66

#### PREVALENCE OF ARTERIAL HYPERTENSION IN REFINERY OPERATORS

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 8, Aug 84 pp 37-39

SIMMA, A., Azerbaydzhani Scientific Research Institute of Labor Hygiene and Occupational Diseases imeni M. M. Efendizade

[Abstract] Hypertension screening was conducted on 494 male refinery operators in four Baku refineries. Blood pressure measurements were an average of two readings taken on a sitting subject. If the diastolic arterial pressure exceeded 95 mm Hg the measurement was repeated after two to eight days. Stable arterial hypertension, as indicated by diastolic pressure over 95 mm at the second determination or use of hypotensive medication in the previous two weeks, was found in 55 of the 259 subjects from 40 to 59 years of age and 3 of the 235 subjects from 20 to 39 years of age. Fifteen subjects were observed with diastolic pressure over 95 mm on the first measurement only. Moderate hypertension, defined as diastolic pressure of 95-104 mm, was seen in 32 cases, marked hypertension (105-115 mm) in 21, and severe (over 115 mm) in 2. Twenty-four of the subjects were unaware of their hypertension, while five subjects were using hypertensive medication. A therapeutic effect (diastolic pressure below 95 mm) was observed in only two. References 4: 3 Russian, 1 Western.  
[1016-12126]

WORKING CONDITIONS AND NERVOUS SYSTEM STATUS IN SUPERPHOSPHATE PRODUCTION WORKERS

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 8, Aug 84 pp 45-49  
[Authors' Abstract]

ALIZAZDE, K. A., ALIYEVA, R. Kh., AKHUNDOV, R. F. and GASONOVA, A. M.

[Text] Investigation of working conditions in superphosphate plants revealed a series of industrial factors which affect the workers. Study of the workers using various methods demonstrated changes in nervous system status, appearing as vegetative-vascular dysfunction and vegetative-sensitive polyneuritis, which had a tendency to increase with increasing length of service. On the basis of the investigations conducted, a series of sanitary measures were proposed, which are directed toward prophylaxis and disease prevention. References 9 (Russian).  
[1016-1126]

HEALTH STATUS OF WORKING YOUTH TRAINING AS HELPERS IN CHEMICAL TRADE

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 8, Aug 84 pp 74-78

ALIYEVA, N. A., Department of Pediatrics, Azerbaydzhan GIDUV [State Institute for the Advanced Training of Physicians] imeni A. Alieyev, USSR Ministry of Health

[Abstract] In order to study the health of working youth, 323 workers, 17 to 18 years of age, in various Sumgait chemical firms, were compared to 103 youths working as electricians' helpers without contact with toxic substances. Climatic factors had the most influence on construction apprentices. Underdeveloped youths in the experimental group were less likely to achieve normal growth than those in the control group. After two years, 30% of the chemical-exposed workers showed health abnormalities, as compared to 10% when work began. Chronic diseases, including vegetative-vascular dysfunction, ENT organ diseases and chronic gastritis, acute respiratory inflammation, angina, appendicitis, and nervous system and sensory disorders were seen. Rate of disease and work loss was greater by a factor of two than for the controls. The effect was independent of the trade in which the youth worker was being trained. The observations are connected with impairment of adaptive-protective mechanisms and immune systems, lowered immunity and sensitization caused by exposure to complex chemical substances. References 8 (Russian).  
[1016-12126]

#### ONE-TIME SURVEY OF HOSPITALIZED PATIENTS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 10, Oct 84 pp 19-21

IBRAYEV, S. S. and YELIZAROV, V. A., Department of Health, Semipalatinsk Oblast; Chair of Social Hygiene and Public Health Administration, Leningrad GIDUV [State Institute for the Advanced Training of Physicians]

[Abstract] In order to improve planning for better utilization of hospital resources and staffing requirements, a one-time survey was conducted on the hospital population at the Urdzharsk Central Rayon Hospital in Semipalatinsk Oblast. Analysis of the case loads demonstrated that 23.6% were in the therapeutic service, 23.9% in the pediatric service, 15.5% in the surgical service, 12.3% in the infectious service, 11.2% in the obstetrical service, 7.8% in the skin and venereal disease service, and 5.7% in the gynecologic service. Age composition analysis showed that 31.9% of the patients were 14 years old or less, 31.9% 15 to 29 years, 8.9% 30 to 39 years, 10.7% 40 to 49 years, 8.3% 50 to 59 years, and 8.4% were 60 years old or older. Men accounted for 47.7% of the patients, and women for 51.3%. Data such as that collected in the one-time survey present a basis for a more rational utilization of the available resources, as well as for future planning of outlays at the hospital.

[1652-12172]

#### SHORTAGE IN ORTHOPEDIC DENTISTRY MATERIALS

Moscow PRAVDA in Russian 14 Sep 84 p 3

LAZARENKO, V., chief, Orthopedic Department, Medical Unit, Elektronika PTO [Production and Technical Association], Voronezh

[Abstract] A recent article in PRAVDA (10 Jul 84) dealt with the cost of precious metals used in dental practice, and the need for changes in the use of dental materials. Twenty years of experience as a dentist has convinced the author that gold is not the ideal material for dental applications for a variety of reasons, including the fact that the allowed quantities per patient are difficult to adhere to. A number of substitutes are possible, including the use of a silver-palladium alloy that can be used in combination with gold. However, the alloy is in short supply. Other materials are also in short supply and introduce obvious complications into dental practice. In general, the production of dental supplies and equipment is not up-to-date and many prosthetic departments operate on a deficit basis.

[013-12172]

## MASS SCREENING IN URBAN RAYON POLYCLINIC

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 10, Oct 84 pp 22-24

SATPAYEVA, R. A., ISMAGULOV, A. S., BABAYEVA, R. M., MADIYEVA, R. Ch. and TAMPIYEVA, R. B., First Chair of Internal Diseases, Alma-Ata Medical Institute

[Abstract] Mass screening [dispensarization] has become an important aspect of preventive medicine in the USSR, which is dedicated to uncovering risk factors and identifying populations at a specific risk. At the No 7 Polyclinic in Sovetskiy Rayon in Alma-Ata, a highly efficient mass screening program has been devised which encompassed 23% of the population in the area in 1983, up from 13.6% in 1980. Statistical analysis has shown that hypertensives constitute 12.9% of the entire cohort, individuals with coronary heart disease represent 8.8% of the subjects, to be followed by patients with duodenal ulcers (6.7%) and chronic pulmonary diseases (6.2%). More than 50% of the subjects continue to be employed. Effectiveness of the program can be measured by health status indicators, which showed that clinical improvements were noted as a result of timely intervention in 63.6% of the subjects in 1983. In one third of the population, there were no clinical changes, and further deterioration occurred in only 5.7% of the patients. These observations point to the practical effects of annual screening, which can be further improved by making such services more readily available through better administrative measures.  
[1652-12172]

## IMPROVING NEONATAL MEDICAL SERVICES

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 10, Oct 84 pp 3-6

CHUVAKOVA, T. K., chief extramural neonatologist, Kazakh SSR Ministry of Health

[Abstract] The decisions of the CC of the CPSU and the Council of Ministers of the USSR on "Measures for Further Improvements in National Health" encompass extensive programs regarding the health of women and children. This program is actively pursued in the Kazakh SSR, and in Alma-Ata alone three new "Mother and Child" facilities have been established in recent years. In Kazakhstan as a whole, 36 new centers or departments of neonatology have been organized to render immediate medical care to the newborn. In addition, much has been done to prevent perinatal mortality by the creation of special stations and departments for women with infections, premature deliveries, and cardiovascular disorders. As part of the ongoing program of improving neonatal care, pediatricians have been assigned to Moscow, Leningrad, Kiev, Kharkov and Alma-Ata for advanced training. Obstetricians, gynecologists and neonatologists are actively involved in mass screening programs, and plans

have been made to open seven additional medical genetic consultation offices by 1987 in Kazakhstan. Much remains to be accomplished in terms of neonatal health in the Kazakh SSR, and successful realization of the plans will depend on administrative and organizational efficiency, and close cooperation among the different medical specialties.  
[1652-12172]

UDC 616+008.0-201+061.75(20)

TWENTIETH ANNIVERSARY OF ALMA-ATA INSTITUTE FOR ADVANCED TRAINING  
OF PHYSICIANS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 10, Oct 84 pp 7-10

ALDASHEV, A. A., IL'ICHEVA, N. F., MYSLYAYEVA, T. G. and TSAREVSKIY, L. P.,  
Alma-Ata Institute for the Advanced Training of Physicians, USSR Ministry  
of Health

[Abstract] The Alma-Ata Institute was established 20 years ago to meet the need for advanced and postgraduate medical training in therapeutics, pediatrics, obstetrics and gynecology, tuberculosis, ophthalmology and in neurosurgery. Since then, the Institute has continued to develop and expand its scope of training and, to date, more than 43,000 physicians--81.9% of them from Kazakhstan--have received such training. The research conducted at the Institute is reflected in the fact that during its existence some 3890 scientific papers have been published by its staff, as well as 31 monographs and 12 training manuals used widely at other similar institutions. The Institute has made plans to continue to meet its commitments in the future, and to train some 7000 physicians and pharmacists per year until the year 2000.  
[1655-12172]

## PSYCHOLOGY

### PSYCHOLOGY AND AUTOMATION OF SCIENTIFIC RESEARCH

Moscow VOPROSY PSIKHOLOGII in Russian No 4, Jul-Aug 84 pp 168-169

VOYSKUNSKIY, A. Ye., Moscow

[Abstract] Participants in the student conference "Automation of Scientific Research" included teachers and scientists from the Siberian Department of the USSR Academy of Sciences, Novosibirsk University and Moscow University, who lectured on specific problems of automation of experimental studies and prospects of developing means of automation in this area. O. K. Tikhomirova (Moscow) organized a discussion of psychological problems of interaction of man and electronic computers. Problems of social and personal psychological consequences of automation, the relationship of creative and routine work, psychological factors of development of dialog systems and the meaning of metaphors such as "artificial intelligence" "personality of a computer" and the possibility of reducing activity to algorithmic procedures were discussed. Great attention was given to discussion of the prospects of modeling and algorithmization of behavior and personality. A. P. Yershov raised problems concerning the limits of use of a language of description of cybernetic systems for characteristics of human behavior and the reciprocal problem concerning the possibility of using psychological terms for artificial intelligence systems. I. S. Ladenko (Novosibirsk) discussed the propriety of using technical language to describe man and society and posed the problem of effective integration of products of technical thought into social life. T. V. Kornilova (Moscow) disclosed possibilities of use of psychological knowledge which can lead to an increase of effectiveness of flow of intellectual activity in a dialog with a computer. Other subjects covered at the conference dealt with historical and polemic aspects of the problem.

[1636-2791]

RESTRUCTURING OF THE PROCESS OF VISUAL RECOGNITION AS PERCEPTION CONDITIONS  
ALTER

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 (manuscript received 26 Oct 83) pp 975-977

KROL', V. M. and BONDAR', Ye. I., Institute of Control Problems, USSR  
Academy of Sciences, Moscow

[Abstract] Two series of experiments were performed. The purpose of the first was to compare the course of the process of recognition of test signals in situations in which test subjects were previously familiarized with the test and knew what signals would be presented, or when they were not familiar with the alphabet of images used. In the second series of experiments a procedure of doubling the exposure of test figures was used. During the first portion of each experiment the time of presentation of the tests was gradually increased. After the threshold of the stage of identification was reached, the time of presentation was increased again, though in neither case were the test subjects informed what image would be presented. The results of both series showed that perception of test figures under conditions such that subjects know their form and position as in the first series or following preliminary activation of their perceptive description as in the second series involves statistically reliable reduction of the threshold of most stages of the recognition process. This indicates a change in the time characteristics of the individual stages of perception when the subjects know in advance the objects to be recognized or when objects are used which have been activated by previous exposure. References 5: 3 Russian, 2 Western. [1617-6508]

UDC 617-001.17-06:616.157-092.9-07

PROTECTIVE PROPERTIES OF PLASMA OF BURNT AND IRRADIATED RATS AGAINST LETHAL EFFECT OF ENDOTOXINS IN VIVO

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 84 (manuscript received 2 Aug 83) pp 96-99

BUDAGOV, R. S. and CHUREYEVA, L. N., Scientific Research Institute of Medical Radiology, USSR Academy of Medical Sciences, Obninsk

[Abstract] The purpose of this work was to estimate protective properties of plasma in disease with increased endotoxemia. Burns and acute radiation sickness were used as models of suppression of physiological mechanisms of detoxication. Experiments were performed on male Wistar rats and mice, which received 3rd degree burns over 15% of the body surface, whole body gamma irradiation at 7.5 Gr or both. At 3 hours, 3, 7 and 12 days after the exposure the animals were decapitated and blood collected. The irradiated mice received 0.2 ml endotoxin intraperitoneally, 1.0 ml freshly prepared rat plasma, then the lethality of the mice in 24 hours was observed. It was found that the plasma of intact rats was capable of decreasing the lethal effects of *S. typhimurium* and *E. coli* endotoxins in vivo in mice. Deep skin burns, acute radiation sickness and the combined effects of radiation and thermal injury did not change this phenomenon. The plasma of the experimental rats retained the protective properties at various periods of time after the thermal, radiation and combined exposures. The functioning of the humoral "detoxication" mechanism is radioresistant, indirectly indicating the non-immunoglobulin nature of endotoxin inactivators. References 19: 6 Russian, 13 Western.  
[1608-6508]

## VETERINARY MEDICINE

### AEROIONIZATION IN PROPHYLAXIS AND TREATMENT OF RESPIRATORY DISEASES OF CALVES

Moscow VETERINARIYA in Russian No 10, Oct 84 p 45

SOLOGUB, T. I., BORZENKO, N. F., ZEMLYANSKIY, V. P. and PLAKHOTNYY, K. F.,  
Krasnodar Kray

[Abstract] Sulfanilamides, antibiotics and vitamins are used to treat respiratory diseases of calves in the Krasnodar kray. To increase the effectiveness of prophylactic and therapeutic interaction, aeroionization was applied, a negative-ion stream being generated by the Aeron I generator. Under prophylactic conditions, the ions were mixed with air, increasing the dose from 50 to 250,000 units per cm<sup>3</sup> of air. The aeroionization lasted 2 hrs per course, 3-4 times each day for about 2 months. Sick animals were treated in specially constructed chambers with air concentration of 1 million units per cm<sup>3</sup> of air, 3-5 times daily for 2 hrs per exposure. In all, 1279 animals were studied. In the study group (649 head), 45 calves became sick and 3 died (6.9 and 0.4% respectively). In the control group (630 head) 621 became sick and 33 died (98.5 and 5.6% respectively). The experimental use of aeroionization helped to lower the respiratory disease figures.  
[1599-7813]

UDC 619:616.9-092:616.988.23:636.4

### PATHOGENESIS OF AUJESZKY'S DISEASE IN PIGS

Moscow VETERINARIYA in Russian No 10, Oct 84 pp 28-31

YUSUPOV, R. Kh., SHOSHOKIN, V. A. and IONOVA, O. P., Kazan Veterinary  
Institute

[Abstract] In experimental systems, pigs can be infected with Aujeszky's disease regardless of the route of pathogen introduction: SQ, IM, intracerebrally, intranasally, intratracheally, with an aerosol or via the alimentary tract. The virus reproduces at the entry site and is disseminated through the lymphatic or vascular system. No data could be found on correlation of the viral excretion in urine or with secretions of the mucous membranes. These aspects were now studied on 64 pigs, 3 days to 6 months old;

the infections were performed according to the A. V. Selivanov method. Clinical and pathological changes during the first week of sickness were reported. A conclusion was reached that as soon as the Aujeszky's disease virus reproduced in the lymph nodes and in tonsils, it could be detected in contact specimens. In nephrocytes, the virus could be found as soon as its titer in urine became sufficiently high for the EM detection. Figures 4. [1599-7813]

UDC 619:576.858.75:576.807.7

USE OF MONOCLONAL ANTIBODIES IN STUDY OF ANTIGENIC CHANGES IN HEMAGGLUTININ H7 OF AVIAN INFLUENZA VIRUSES

Moscow VETERINARIYA in Russian No 10, Oct 84 pp 31-33

PODCHERNYAYEVA, R. Ya. and SKOVORODKA, V. V., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences

[Abstract] Monoclonal antibodies can be used to determine accurately the degree of antigenic relationship between various viral strains. This point was investigated on avian influenza viruses isolated during the years 1934-1980 from various birds and relating to the subspecies No 7. Monoclonal antibodies were prepared (in Doctor Webster's laboratory) in cultures of hybridoma cells inducing antibodies to hemagglutinin strain A/seal/Massachussetts/80. Only four monoclonal antibodies neutralized strain A/seal/Massachussetts/80 in high titer. No relationship was noted between the antigenic connection and the time from the isolation of a strain nor the type of host from which the strain was isolated. The studies of antigenic relationships between individual influenza viruses can be done only after a careful selection of a genetically-homogeneous population. Each strain should be cloned at least through five passages and a careful history of these passages must be kept. [1599-7813]

## CONFERENCES

UDC: 613.6+614.79]:061.24.053 (1983)

JOINT CONFERENCE OF PROBLEM COMMISSIONS 'SCIENTIFIC PRINCIPLES OF LABOR HYGIENE AND OCCUPATIONAL PATHOLOGY' AND 'SCIENTIFIC PRINCIPLES OF RURAL HYGIENE' (5-7 Apr 1983, Moscow)

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 3, Mar 84, pp 60-61

SOLODOVA, R. A., Moscow

[Abstract] The two commissions named in the title met jointly 5-7 April, 1983 to discuss problems faced by the commission in relationship to implementation of the USSR Food Program. The Rural Hygiene Commission has developed a program for combined hygienic studies through 1990 to improve the health of working conditions and daily life for the rural population. The discussion of the materials of the report included the chief of the Department of Occupational Pathology, Leningrad Sanitary Hygienic Institute, Professor V. G. Artamonova, the head of the Department of General Hygiene of Kuban' Medical Institute, Professor S. Kh. Nikolov, the deputy director of the Institute of Regional Pathology, Kazakah SSR Ministry of Health, Doctor of Medical Sciences, A. N. Lukashev, the director of Ufa Institute of Hygiene and Occupational Diseases, Candidate of Medical Sciences L. M. Karamova, the scientific secretary of the Problem Commission 'Scientific Aspects of Rural Hygiene,' Candidate of Medical Sciences V. I. Chernyuk, the head of the Department of Occupational Pathology, Institute of Labor Hygiene and Occupational Diseases, USSR Academy of Medical Sciences, Doctor of Medical Sciences A. M. Monayenkova, the head of the Laboratory of Labor Hygiene in Agriculture, Uzbek Institute of Sanitation, Hygiene and Occupational Diseases A. I. Iskhakov and others.

[1608-6508]

## CONFERENCE ON NEUROSCIENCES

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian  
Vol 34, No 5, Sep-Oct 84 pp 995-996

KOSTANDOV, E. A.

[Abstract] A conference on neurosciences dedicated to the memory of Aleksandr Ivanovich Shapovalov was held 12 through 17 February 1984 in Bakuriani. A group of reports read at the conference was dedicated to the role of various peptides in the performance of a number of functions in the body. In a review report, P. K. Klimov reported that regulatory peptides perform a variety of functions in the body. They are hormones, neurohormones, neuromediators, neuromodulators, releasing factors, regulate body temperature, metabolism, trophic functions, lactation, the activity of the organs of digestion and other functions. Opiate neuropeptides facilitate the regeneration of nerve elements in experiments with tissue cultures (O. B. Il'inskiy). Data presented by V. G. Skarbitskiy convincingly indicate the effectiveness of using the method of surviving sections to study the nature of action of chemical, particularly medicinal, substances on brain structures. He demonstrated the clear facilitating influence of opioid peptides on the cell activity of field CA<sub>1</sub> in the hippocampus. Analysis of the activity of nerve and glial cells in dissociated tissue cultures was the subject of the review report of I. K. Svanidze. Two reports were dedicated to the role of gamma-aminobutyric acid in the functions of the nervous system. The role of mediator systems of the neostriatum in conditioned reflex restructuring was discussed. The question of specific neurophysiological mechanisms stimulating paradoxical sleep was analyzed. An interesting report discussed transplantation of nerve tissue. Reviews were presented on the neurophysiological and membrane mechanisms of memory and physiological mechanisms of regulation of cerebral blood supply. Cooperation of the two hemispheres in mental functions was also discussed.  
[1617-6508]

## CONFERENCES, SEMINARS

Moscow VETERINARIYA in Russian No 10, Oct 84 pp 77-78

LUCHKO, M. A.

[Abstract] The XVII Union convention of microbiologists and epidemiologists was held in Baku. Corresponding member of All-Union Academy of Agricultural Sciences imeni Lenin (AUAASIL), G. F. Koromyslov discussed various studies of mycoses, brucellosis, tuberculosis, rabies, campylobacteriosis. He covered methods used in their treatment and prophylaxis and pointed out the need for in-depth studies of these diseases. In his paper on "Problems of salmonella and viral intestinal infections," V. I. Pokrovskiy noted that, according to foreign reports, 30% of gastrointestinal diseases of unknown etiology are

caused by campylobacteria. He stressed the potential of immunoenzymatic methods in such studies. Academician of the USSR Academy of Medical Sciences, V. M. Zhdanov, addressed application of genetic engineering techniques to preparation of vaccines. Corresponding Member of the USSR Academy of Medical Sciences, S. M. Navashin, discussed chemotherapy and chemopreventive measures in control of infectious diseases. Academician of the USSR Academy of Medical Sciences, V. I. Pokrovskiy, was elected as the chairman of the Council of the Society and G. F. Koromyslov, corresponding member of AUAASIL became a member of the Council.  
[1599-7813]

## MISCELLANEOUS

### HEATED CLOTHING RESEARCH

Kiev RABOCHAYA GAZETA in Russian 14 Sep 84 p 2

KLIMENKO, V., deputy director, Institute of Materials Science Problems, Ukrainian Academy of Sciences, Chariman, Bureau of the Scientific and Technical Council, Powder Metallurgy Research and Production Complex, Institute of Materials Science Problems

[Abstract] The author comments on organizational features and original developments of the powder-metallurgy research and production complex (NPK) of the Ukrainian Academy of Sciences' Institute of Materials-Science Problems. This complex includes the institute's Special Design and Technological Bureau and the Brovary Powder Metallurgy Plant. The NPK is said to be the USSR's leading center for problems of powder metallurgy and in the field of the development of electric heating devices.

A number of effective recent developments of NPK personnel are mentioned. Among them is a set of work clothing, the "Pingvin" [penquin], which is being used by workers in the Far North. This clothing is equipped with elastic electric-heating elements made of a carbon fabric. The set includes a warm vest which is worn underneath outer clothing and heated slippers which are worn inside footwear. A large group of specialists including Candidate of Medical Sciences I. M. Naumenko worked on the development of the "Pingvin". Another group of NPK personnel developed and introduced processes employing the method of the spraying of melts for the production of products made of self-connected silicon carbide and iron powder. Doctor of Technical Sciences G. G. Gnesin headed this project.

FTD/SNAP

CSO: 1840/010

UDC: 615.31:547.422.22].03

POLYETHYLENEGLYCOLS AND THEIR USE IN BIOLOGY AND MEDICINE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 4, Apr 84 (manuscript received 8 Jun 83) pp 17-21

IGUDIN, L. I., MARKMAN, G. A., LOBAN', S. A., POZINA, T. M. and  
MIGUNOV, V. N., State Institute of Standardization and Testing of Medical  
Biological Preparations imeni L. A. Tarasevich, Ministry of Health,  
USSR; Central Scientific Institute of Vaccines and Sera  
imeni I. I. Mechnikov, Moscow

[Abstract] Polyethyleneglycols have antibacterial properties which are resistant to the action of light, heat and moisture. The polymers are used in biotechnology in the production of hybrids and monoclonal antibodies, are good cryoprotectors and cryoconservants and are used for concentration of bacteriophages, viruses, enzymes, toxins and antitoxins. The mechanism of intermolecular interaction of the polymer with protein is the exclusion effect. The hypothesis of exclusion is based on measurement of chemical potentials as a function of dimensions of the excluded molecules. The precipitation of serum proteins by PEG is a complex, multifactor process which is not fully understood and requires further study. Publications of the past two decades indicate that PEG is attracting the attention of specialists as a promising substance for various areas of biology and medicine. Future studies will probably concentrate on the development of new technologies for the production of therapeutic, prophylactic and diagnostic preparations based on this polymer and in-depth study of the theoretical principles of mechanisms of actions of PEG, as well as its significance in cryobiology and the fractionation of serum proteins. References 56: 26 Russian, 30 Western.  
[1528-6508]

## SYNTHESIS OF PURE (+)-TRANS-VERBENOL

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 279, No 1, Nov 84  
(manuscript received 12 Dec 83) pp 113-114

ISAYEVA, Z. G. and KARLIN, V. V., Institute of Organic and Physical Chemistry  
imeni A. Ye. Arbuzov, Kazan Branch, USSR Academy of Sciences

[Abstract] Studies on the preparation of pure (+) or (-)-trans-verbenol (2-pinen-4-ol), for evaluation of unsaturated bicyclic terpene alcohols as pheromones, led to a modification of the Mori technique for the synthesis of the enantiomers [Mori, K., Agr. Biol. Chem., 40(2):415, 1976]. The essential step included replacement of "ethienates" by 3,5-dinitrobenzoic acid esters for recrystallization, followed by saponification with 3% aqueous-methanol KOH solution and product chromatography. This approach resulted in the isolation of pure (+)-trans-verbenol from the ( $\pm$ )-trans-verbenol mixture. References 6: 1 Russian, 5 Western. [1615-12172]

## BIOACOUSTICS IN BREEDING OF FOWL

Moscow PRIRODA in Russian No 9, Sep 84 pp 44-49

FOKIN, S. Yu., Department of Wildlife Breeding, Central Scientific Research Laboratory of Game Farming and Preserves, Main Administration of Game Farming and Preserves, RSFSR Council of Ministers

[Abstract] A five-year study was conducted on the use of acoustal signals to control the behavior of game birds. Fledglings recognize as parents those birds whose voices they heard during hatching and the first 2-3 days of life. While these maternal signals can be used to control the behavior of incubator-raised chicks, they are much less effective in large groups of newly-hatched birds. This could be overcome by inducing mild discomfort in the chicks. The maternal voice could be replaced by a monosignal with corresponding frequency and time parameters. Supplying calling and comforting signals quieted the fledglings, increasing feeding and decreasing fights. Since this improves chick growth, it is recommended in fowl breeding. If the birds are to be released into the wild, contact with humans should be minimized and accompanied by loud, aversive sounds such as shouts or sirens. This approach was successful in an experiment involving the raising of 130 ducks, which retained their fear of man in the wild, and has also been used in large duck farms. Supplying breeding songs elicits reproductive behavior and improves output of such species as grouse, which breed poorly in captivity. Figures 7. [1556-12126]

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