JPRS-ULS-90-017
24 OCTOBER 1990

FOREIGN BROADCAST INFORMATION SERVICE

JPRS Report

Science & Technology

USSR: Life Sciences

Science & Technology
USSR: Life Sciences

JPRS-ULS-90-017

CONTENTS

24 October 1990

Biochemistry

Biotechnology

Epidemiology

Laser Bioeffects

Medicine

Molecular Biology

Pharmacology, Toxicology

Physiology

Public Health

Virology

UDC 577.152.314.1:579.873.71

Strain Streptomyces Fradiae, Producer of Restriction Endonuclease SFR 274 I

907C0663A Novosibirsk IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKIKH NAUK in Russian No 1, Apr 90 pp 32-34

[Article by L. I. Puchkova, G. N. Krivopalova, I. S. Andreyeva et al.; NIKTI BAV NPO "Vektor" Ministry of the Medical and Biological Industry, USSR, Berdsk]

[Abstract] An attempt to detect new promising restrictase producers among strains of the Streptomyces genus used strains of stretomycetes S. fradiae Ac 149 and S. lavendulae S-494. Strain S. fradiae Ac 149 proved to be a promising restrictase producer, recognizing sequence CTCGAG. It may replace Xho I and Sla I in experiments involving fragmentation of DNA in genetic engineering studies. Figure 1; references 9: 4 Russian; 5 Western.

UDC 579.68.023.12(282.256.3)

Appearance of Producer-strains of Restriction Endonucleases Among Aquatic Microorganisms of Lake Baykal

907C0663B Novosibirsk IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKIKH NAUK in Russian No 1, Apr 90 pp 35-37

[Article by V. S. Dedkov, V. Ye. Repin, N. I. Rechkunova et al.; NIKTI BAV NPO "Vektor", Ministry of Medical and Biological Industry, USSR, Berdsk, Limnological Institute, Siberian Department, Academy of Sciences, USSR, Listvyank]

[Abstract] Detection and identification of new producer-strains of restrictases among microorganisms of the unique ecological niche, Lake Baykal were described. Water samples were taken from different depths in different parts of the lake, from bottom deposits and along the shore. Bacterial strains *Flavobacterium aquatile, Hafnia alvei, Acinetobachter calcoaceticus* and *Pseudomonas gladioli* were producers of restrictases Fau I, Hal I and Hal II, Aca I, Pga I, respectively. The producer-strains detected are cultivated readily and may be suitable for industrial production of restrictases. Figure 1; references 10: 6 Russian; 4 Western.

UDC 577.217.5

Visual Rhodopsin Synthesis in Cell-Free Translation System. Part II. Functional Properties of Recombinant Rhodopsin and Its Mutant Forms

907C0778A Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 16 No 3, Mar 90 (manuscript received 11 Jul 89) pp 303-308

[V. V. Gurevich, S. A. Zozulya, Ye. P. Shirokova, T. A. Zvyaga, M. N. Garnovskaya*, I. L. Dumler*, P. R. Badalov, M. Yu. Natochin, I. D. Pokrovskaya, and B. Ye. Shmukler, Branch of the Bioorganic Chemistry Institute imeni M. M. Shemyakin, USSR Academy of Sciences, Puschino; *Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, USSR Academy of Sciences, Leningrad]

[Abstract] The functional properties of recombinant rhodopsin and two of its mutant forms were expressed in vitro and obtained by oligonucleotide-directed mutagenesis. The functional properties of rhodopsin were studied by its ability to activate cGMP phosphodiesterase and transducin GTP-ase. It was demonstrated that opsin that is expressed in a cell-free translation system and is inserted into liposomes from phosphatidylcholine by cotranslation is able to regenerate the 11-cis-retinal chromophor. It was also shown that recombinant rhodopsin does not differ from natural rhodopsin in its spectral and functional properties. Oligonucleotide-directed mutagenesis was used to produce two mutant rhodopsins with amino acid substitutions in the C-terminal domain. The substitution of Cys-316->Ser does not alter rhodopsin's ability to activate a visual cascade of amplification, while the double mutations Asp-330->Asn and Asp-331->Asn sharply diminish its functional activity. In vitro translation may be used as a preparative system of expression in protein engineering studies and in other proteins, and also as a system for large scale synthesis of protein for practical use with a continuous supply of energy sources and amino acids into the translation mixture. Figures 2; references 12: 3 Russian, 9 Western.

UDC 547.964.4.057:577.175.852

Synthesis and Study of Cyclic Angiotensin Analogs

907C0778B Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 16 No 3, Mar 90 (manuscript received 26 Jun 89) pp 358-369

[Yu. Ye. Antsans, D. A. Biseniyetse, I. A. Vosekalna, N. V. Myshlyakova, G. I. Chipens, Institute of Organic Synthesis, Latvian SSR Academy of Sciences, Riga]

[Abstract] Five novel cyclic analogs of angiotensin were synthesized and studied using conventional methods of peptide chemistry. Study of the biological activity of the compounds on blood pressure in rats and on smooth muscle in vitro demonstrated that compounds (I) - (IV), which have a fixed potential turn in the C-terminal area of the angiotensin molecule, have no myotropic effect and do not affect the myotropic effect of angiotensins nor arterial pressure in rats. Compound (V) does inhibit the myotropic effect of angiotensin. It also has 0.1 percent of the pressor activity of angiotensin in a concentration of 10^{-6} M/kg, while larger doses of (V) were shown to diminish the pressor effect of angiotensin by 17-41 percent, most likely due to competitive antagonism. Circular dichroism spectra in water and ethanol were used to study the chiroptical properties of the compounds. Figures 11; references 14: 5 Russian, 9 Western

UDC 615.357:577.175.322/.012.6

Medicinal Form of Genetic-engineered Somatotropin

907C0665 Moscow FARMATSIYA in Russian Vol 39 No 2, Mar-Apr 90 pp 37-40

[Article by G. K. Korotayev, T. I. Lys, L. G. Makarova et al.; All-Union Scientific Research Institute of Biotechnology, Moscow]

[Abstract] Creation of a stable medicinal form of genetic-engineered somatotropin and standardization of its quality involved the following steps; preparation of 0.05 M of an ammonium hydrocarbonate solution. Preparation of a 1 percent solution of mannite in the ammonium hydrocarbonate solution. Preliminary filtration of the solution obtained through a packet of filters and a membrane filter with pore size of 0.8-0.45 μm. Preparation of a 0.1 percent solution of genetic-engineered somatotropin in the filtrate obtained. Sterile filtration through a membrane filter with pore size 0.22 μm. Pouring into 1 or 2 ml flasks or vials (2 or 4 Effective Dose respectively). Freezing, hardening, sublimational drying, corking, and preparation of finished product. The product (somatogen) is a white powder, soluble in water and in a 0.25 percent solution of novacaine. Its solubility, transparency, chromaticity, pH, toxicity and sterility met the standards of quality required and these standards were unchanged during storage of 2.5 years. References 13: 7 Russian; 6 Western.

UDC 636/639:591.3:57.086.835

Cell Engineering With Preimplantation Embryos of Farm Animals

907C0747B Moscow SELSKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian No 2, Mar-Apr 90 (manuscript received 12 Aug 88) pp 51-55

[Article by V. I. Zakharchenko and M. I. Prokofyev, All-Union Scientific Research Institute of Agricultural Biotechnology, Moscow]

[Abstract] Cell engineering studies with 7-8 (Group I) and 9-11 (Group II) day-old bovine preimplantation embryos demonstrated that their bisection resulted in the regeneration of the morula-blastocyst stage in 92.1 and 91.8 percent of the cases, respectively. Repeated bisection of the latter and incubation under appropriate in vitro conditions for 16-20 h again resulted in morula and blastocyst formation in 67.6 percent of the cases originally derived from the 7-8 day embryos, and in 100 percent of the cases from the 9-11 day embryos. In addition, studies with zygotes at the pronucleus stage derived from Soviet chinchilla and New Zealand rabbits showed that development to the morula-blastocyst stage was possible in 44.7-61.3 percent of the cases following microsurgical removal of the male pronucleus. The success of such investigations opens new vistas in the engineering of commercially important farm animals. Tables 2; references 11 (Western).

UDC 616.98:578.833.29]-036.2-07(474.5)

Hemorrhagic Fever With Renal Syndrome in Lithuania

907C0662E Moscow VOPROSY VIRUSOLOGII in Russian Vol 35 No 1, Jan-Feb 90 pp 72-74

[Article by L. I. Moteyunas, S. V. Spurga, Ye. A. Tkachenko et al.; Vilnyus University, Scientific Research Institute of Poliomyelitis and Viral Encephalites, USSR Academy of Medical Sciences, Moscow]

[Abstract] The first case of hemorrhagic fever with renal syndrome [HFRS] in Lithuania was diagnosed in 1967 and the first case confirmed by laboratory methods occurred in 1981. A retrospective study was performed in order to determine the true morbidity rate from HFRS and problems related to natural foci of the infection in Lithuania and included a study of the history of the disease, determination of the level of natural immunity of the population, search for HFRS patients among hospitalized persons with high fever and a study of the lungs of small wild animals to detect HFRS virus antigen. The retrospective study of the history of the disease revealed its presence in 17 rural regions and 2 towns with 33 cases or 1 percent of the 3402 histories studied. Antibodies to HFRS virus among apparently healthy persons appeared much more frequently in the central Lithuanian ecological-faunistic region than in the other 2 ecological-faunistic regions combined. Forestry workers were at somewhat increased risk but antibodies appeared in other persons. The percentage of seropositive persons was higher in the 50-59 year old age group. No antibodies to the virus were found in blood donors, possibly because 82 percent were under the age of 40 years. The study of small mammals in Lithuania revealed HFRS antigen in 131 (2.9 percent) of animals trapped in 9 of the 14 regions of Lithuania studied. The basic host of HFRS virus in natural foci of LitSSR was the common redbacked vole (Clethrionomys glareolus). The most likely location of HFRS viruses was in central regions of Lithuania with predominance of leafy (birch and European Aldar) and spruce forests with a significant admixture of oak. References 13: 10 Russian; 3 Western.

UDC 616.36-002-022.7:578.891]-07:616.153.962.4-097+616.153.962.4 -097:578.891]:312.6([47+57]+437)

Frequency of Encountering Delta-antibodies in USSR and Czechoslovakia

907C0666 Moscow GEMATOLOGIYA I TRANSFUZIOLOGIYA in Russian Vol 35 No 2, Feb 90 pp 33-34

[Article by T. V. Golosova, A. N. Margolina, M. Kselikova and Y. Urbankova: All-Union Hematological Scientific Center, USSR Ministry of Health, Institute of Hematology and Blood Transfusion, Czechoslovakian Ministry of Health, Prague]

[Abstract] Comparative studies carried out in the USSR and Czechoslovakia showed the distribution of delta-antibodies in both countries. The infection was associated with formation of severe forms of viral hepatitis B and was accompanied by a chronic process in the liver, in many cases. Detection of antibodies to delta-antigen in a preparation of immunoglobulin against hepatitis B indirectly showed the necessity for screening blood donors for HBs-antigen by sensitive methods (passive hemagglutination reaction, RPGA and immunoenzymic analysis) to remove persons with persisting HBs-antigenemia. References 5 (Western).

UDC 616.98:579.842.23]-036.22

Sanitary-Epidemiologic Surveillance of Natural Plague Breeding Grounds

907C0772A Moscow VOYENNO-MEDITSINSKIY ZHURNAL No 3, Mar 90 pp

[Article by Colonel of Medical Service A. P. Boroday, Lieutenant Colonel of Medical Service P. N. Arkhilov, Lieutenant Colonel of Medical Service K. G. Tolstov, and Candidate of Biological Sciences, Major of Medical Service A. I. Dubovoy]

[Abstract] The sanitary-epidemiologic surveillance of a natural breeding area for Yersinia pestis by means of epizootologic screening between mid-May 1988 and the end of June 1988 in two unnamed regions 60 km apart encompassed 1,157 rodents and 17,889 fleas found on them. Ten strains of Y. pestis were isolated from Rhombomys opimus great gerbils, fleas, and ticks. Twenty-two of the 1,157 sera samples had antibodies to Y. pestis, and over one-fourth of those testing positive were young animals, thus indicating that infection had been relatively recent. No pathologic alterations were noted in 75 percent of the incidences of Y. pestis in the animals, thus increasing the risk of plague infection.

UDC 615.849.19.038:617.7

Clinical Use of Novel Soviet Laser Device in Anterior and Posterior Chambers of Eye

907C0774A Moscow VESTNIK OFTALMOLOGII in Russian Vol 106 No 3, May- Jun 90 (manuscript received 20 Apr 89) pp 22-23

[Article by A. V. Bolshunov, B. N. Malyshev, and D. M. Mashtakov, All-Union Scientific Research Center of Ocular Diseases, USSR Ministry of Health, Moscow]

[Abstract] Presented in this article are a technical description and the experimental results of a Soviet ophthalmologic device designed to coagulate and degrade ocular tissues. The two laser sources employed in the device are the YAG-laser (yttrium-aluminum-garnet) that operates continuously on a 0.532 μm wavelenth and a neodymium glass laser that operates at a 1.06 μm wavelength in single and multiple modes. The potential use of this laser device in the treatment of abnormalities in the anterior and posterior chambers of the eye was studied in 48 patients, with results indicating that this device may be used for coagulation and degradation of ocular tissues. Figures 5; tables 1; references 3 (Russian).

UDC 616.12-005.4-085.849.19-036.8

Combined Helium-Neon Laser Therapy in Ischemic Heart Disease Patients

907C0776A Moscow KARDIOLOGIYA in Russian Vol 30 No 3, Mar 90 (manuscript received 10 Nov 88) pp 24-28

[Article by I. M. Korochkin, A. V. Kartelishev, G. V. Babushkina, and G. M. Kapustina, Chair of Internal Diseases No. 4, Second Moscow Medical Institute imeni N. I. Pirogov]

[Abstract] The effectiveness of laser therapy and possible mechanisms of its therapeutic effect on ischemic heart disease were studied on 177 patients aged 30-80 years divided into two groups to study the individual effects of topical (Group A) and intravenous (combined) (Group B) helium-neon laser (HNL) irradiation. Patients in Group A were treated in a manner as described in previous works (I. M. Korochkin, G. R. Romanova, et al., SOV. MED., No 2, 1984, pp 6-10, and I. M. Korochkin, A. V. Kartelishev, et al., SOV. MED., No 1, 1988, pp 23-27), while patients in Group B received a combined course of laser therapy with HNL irradiation consisting of two to six daily treatments, 1.5 mW, 45 min per session. Biochemical studies demonstrated a decrease in membrane-bound phospholipids with a concomitant rise in free cholesterol, thus indicating structural damage to the membranes. Stress tests were conducted before, immediately after, and 5 months after treatment. A 45 percent increase in the threshold capacity in functional class (FC) II and a 60 percent increase in FC III and IV patients indicate the beneficial effect of laser therapy. Combined HNL treatment was more effective than traditional treatment with figures of 89 and 84.5 percent versus a 55 percent remission for FC IV patients. Remission lasted 2-5 months in this group as compared to 5-7 months in FC II. An additional course of external laser therapy had the desired effect of extending the remission period. Intravenous laser therapy probably activates oxygen uptake, with catalase activating the enhancement of oxygen transport. The results demonstrated that low energy HNL irradiation acts indirectly on phospholipids and other lipids, and provides for structural organization with restoration of morphological and functional properties, including medicinal sensitivity. Figures 2; tables 1; references 8 (Russian).

UDC 616.895.8-085.361.438:547.96]-036.8

Thymic Peptide Thymalin in Management of Schizophrenics With Therapeutic Resistance

907C0775A Moscow ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S.S. KORSAKOVA in Russian Vol 90 No 3, Mar 90 (manuscript received 29 Mar 89) pp 100-103

[Article by N. V. Govorin and O. P. Stupina, Chitinskiy Medical Institute]

[Abstract] The efficacy of the thymic peptide thymalin [sic] in the management of schizophrenics with therapeutic resistance was investigated in 44 patients aged 18-52 years with varying types of schizophrenia. These patients presented with a high level of antithymic antibodies and antibodies to psychotropic agents in addition to pharmogenic resistance resulting from long-term psychopharmacotherapeutic use. Patients with psychopharmacotherapeutic resistance were administered 30 mg of thymalin intramuscularly every other day for 3-4 weeks. Improvement was noted by the third to fourth injection in some patients and peaked at 2-3 weeks. Eighty percent of the patients in the experimental group noted significant improvement, while two experienced a deterioration in condition. Thymalin was more effective in cases of secondary (pharmacogenic) therapeutic resistance. In pathologic therapeutic resistance, thymalin acted as a psychostimulant. Thymalin enhanced T-lymphocyte functional activity and elimination of immune deficiency problems while lowering antibrain antibodies in the blood sera. The results suggest that the clinical and immunological correlations in schizophrenics indicate the significance of immune disorders in the formation of resistance and the complex and varied nature of these disorders. Tables 1; references 24: 20 Russian, 4 Western.

UDC 615.212.7:[547.95:547.943].015.4

Synthetic Neuropeptides: Novel Field in Anesthesiology

907C0780A Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, Mar 90 (manuscript received 26 Jan 89) pp 3-5

[Article by B. M. Shloznikov, A. V. Vinogradov, M. I. Titov, and V. M. Likhvantsev, Surgical Institute imeni A. V. Vishnevskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] Dalargin (Tyr-Dala-Gly-Phe-Leu-Arg), a leu-enkephalin analog, arrests the development of extrasystole while simultaneously improving hemodynamics following myocardial infarct. In the continuing search for new anesthetics without undesirable side effects, research of dalargin's antinociceptive properties demonstrated its poor analgesic activity, three to four times weaker than that of the selective agonist FK-33824. There are two possible mechanisms of dalargin's antinociceptive action. The first is via peptide interaction with hypothetical N-opiate peripheral receptors, and the second is the probable penetration of dalargin from systemic circulation into the brain. Dalargin's mechanism of action may also be associated with the fact that its antinociceptive properties are manifest only in total muscular paralysis. The other advantages of dalargin include its marked antistress effect, antioxidant activity, and the organ protecting effects on the heart, liver, and pancreas. These results suggest that dalargin may replace narcotic analgesics for reducing pain. References 50: 23 Russian, 27 Western.

UDC 615.212.7:[547.95:547.943].015.4

Prognosing Antinociceptive Effect of Dalargin During Presurgical Period

907C0780B Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, Mar 90 (manuscript received 26 Jan 89) pp 5-7

[Article by O. V. Petrov, F. S. Bikmulina, V. L. Vinogradov, Ye. P. Fomchenkov, P. V. Smolnikov, and B. M. Shloznikov, Surgical Institute imeni A. V. Vishnevskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] Dalargin, a synthetic leu-enkephalin analog, works well in 86 percent of patients. The antinociceptive effect of dalargin was studied by means of its influence on somatosensory induced potentials and by changes in threshold pain sensitivity to determine why dalargin is ineffective in 14 percent of patients, and how to predict whether dalargin will affect patients before an operation. The study was performed on 40 individuals aged 21-60 years with somatosensory induced potentials recorded in response to an electric current stimulus, and threshold pain sensitivity recorded in response to heat. The induced potentials were measured 12 min before and after dalargin administration, and the results demonstrated that dalargin must be evaluated by individual reaction to the drug. The findings also indicate that the antinociceptive effect of dalargin can be reliably predicted. Figures 2; references 2 (Russian).

UDC 616.24-089.5:[615.31:547.95.547.943]-031.81-036-07

Replacing Narcotic Analgesics With Dalargin as Novel Means of General Anesthesia in Lung Operations

907C0780C Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, Mar 90 (manuscript received 26 Jan 89) pp 7-11

[Article by M. I. Kuzin, B. M. Shloznikov, B. V. Likhvantsev, A. A. Karelin, A. L. Tverskoy, A. V. Sitnikov,

O. A. Grebenchikov, and V. I. Andreyev, Surgical Institute imeni A. V. Vishnevskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] The efficacy of dalargin as a general anesthetic was compared to that of traditional neuroleptic analgesics in 80 patients aged 26-64 years. The cohort consisted of men and women with lung cancer, tumors, tuberculoma, etc., with the following operations: lobectomy, segmented resection of the lung, pulmonectomy, enucleation of lung tumors, etc. Conventional premedication with phentanyl, droperidol, seduxen, or tubarine was followed by administration of 15.6 mg/kg·h of dalargin. General anesthesia was controlled by clinical indications and hemodynamic status. The results demonstrated that the pO_2 of arterial blood was higher in the experimental group due to the better diffusion ability of the lungs. Patients in the experimental group also experienced a shorter period of restoration of independent respiration. Dalargin has a lower deteriorating effect on the body. The findings indicate that this method is as good as or better than traditional neuroleptic analgesic in analysis of central peripheral hemodynamics, oxygen-transport, gas composition, and acid-base balance, suggesting that this treatment is effective and should find greater use in this type of operation. Tables 4, references 23: 17 Russian, 6 Western.

UDC 616.7-08:615.2:617.723

Emoxypine Efficacy in Comprehensive Treatment of Ocular Diseases

907C0766B Baku AZERBAYDZHANSKIY MEDITSKINSKIY ZHURNAL in Russian No 4, Apr 90 pp 59-62

[Article by D. T. Gyulaliyeva, Ophthalmologic Hospital, Baku]

[Abstract] Emoxypine in a 1 percent solution was employed to treat 387 patients ranging in age from 16 to 60+ with various ocular diseases. The patients were divided into four groups. Group 1 consisted of those with vascular pathology (thromboses, and hemorrhaging resulting from hypertension, atherosclerosis, and diabetes). Conventional treatment with anticoagulants, antispasmotics, vasodilators, and vitamins was employed in addition to an emoxypine solution administered subconjunctivally or intramuscularly. Patients underwent treatment twice a year. Improvement was noted in all cases, with 50 percent of patients reporting good eye function. Group 2 consisted of patients with chorioretinal dystrophy and abiotrophy. Management consisted of comprehensive conventional treatment in addition to emoxypine injection. The twice yearly treatment resulted in improved visual acuity in 62 percent of patients and stabilization in 38 percent. In the third group were patients who sustained eye injuries caused by a blunt instrument and marked by hemorrhaging. Vision was fully restored in 97.6 percent of this group employing only the emoxypine solution. Group four consisted of patients who had already been treated surgically. Subconjunctival emoxypine administration resulted in full visual restoration in this group. There were no apparent side effects from this treatment, nor was there any recurrence of hemorrhaging noted. Emoxypine is recommended not only for ocular pathologies, but also shows promise for use in vascular conditions and neurological and therapeutic practice.

UDC 616.12-608.318-02:615.835.12

Beneficial Effects of Adaptation to Intermittent Hypoxia in Pressure Chamber in Idiopathic Arrhythmias

907C0187A Moscow KARDIOLOGIYA in Russian Vol 29 No 6, Jun 89 (manuscript received 6 Dec 88) pp 53-56

[Article by F. Z. Meyerson, Ya. I. Kots, V. B. Volovich, I. A. Aleshin, V. P. Tverdokhlib, and Ye. Ye. Ustinova, Scientific Research Institute of General Pathology and Pathologic Physiology, USSR Academy of Medical Sciences, Moscow; Orenburg Medical Institute]

[Abstract] Therapeutic trials were conducted with adaptation to intermittent hypoxia (Ural-1 pressure chamber; 3200 m altitude equivalent) to assess the utility of this modality in the management of idiopathic arrhythmias. The study was conducted with 15 male and female patients with a mean age of 32 years (19-41 range) subjected to 22 pressure chamber procedures, each 3.5 h in duration. Constant monitoring demonstrated that this form of treatment led to a 66.9 percent reduction in the incidence of ventricular extrasystoles, and a 69.28 percent reduction in atrial extrasystoles (p)in men than women and unaccompanied by changes in baseline rhythmicity. Additional benefits consisted of a moderate hypotensive effect and enhanced efficiency of oxygen utilization. The therapy was also accompanied by subjective improvements in wellbeing, attenuation of cardiologic episodes, improved sleep patterns, and alleviation of dyspnea. The beneficial effects of hypobarism were attributed to activation of stress-limiting mechanisms and elimination of excess adrenergic influences on the heart. In view of the positive results and the absence of side effects, this approach to the management of idiopathic arrhythmias appears to deserve further evaluation. Tables 1; references 18: 12 Russian, 6 Western.

UDC 616.127-005.4-085.22-039.71

Enhancement of Myocardial Tolerance of "Global Ischemia" and Reperfusion Lesions by Synthetic Tripeptides

907C0187B Moscow KARDIOLOGIYA in Russian Vol 29 No 6, Jun 89 (manuscript received 11 Aug 87) pp 85-88

[Article by G. F. Dvortsin and V. N. Shatalov, Laboratory of Experimental Surgery, Institute of Surgery imeni A. V. Vishnevskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] Trials were conducted with isolated heart preparations obtained from 200-250 g male Wistar rats to assess the effects of Try-Pro-Arg (TPA), a synthetic tripeptide fragment of endogenous opioids, on myocardial function. The retrograde perfusion studies demonstrated that subjecting the heart to global ischemia for 30 min at 37°C resulted in irreversible functional deterioration. Reperfusion with a cardioplegic solution with 16 mM K^+ led to partial recovery. However, reperfusion with a cardioplegic solution supplemented with $3 \cdot 10^{-9}$ M TPA ensured 71-100 percent recovery. These preliminary observations suggest that TPA may find clinical application in the prevention of myocardial damage in open heart surgery, pending additional animal studies to define the mechanism of action and dose-effect relationships. Figures 1; tables 1; references 12: 3 Russian, 9 Western.

UDC 616.12-005.4-085.38.015.2:615.246.2

Management of Ischemic Heart Diseases with Enteric Adsorbents and Hemosorption

907C0187C Moscow KARDIOLOGIYA in Russian Vol 29 No 6, Jun 89 (manuscript received 18 May 88) pp 107-108

[Article by M. A. Dudchenko, Yu. M. Kazakov, M. M. Potyazhenko, Ye. A. Vorobyev, and Ye. V. Bazhan, No 1 Chair of Internal Diseases, Therapeutic Faculty, Poltava Medical Stomatological Institute]

[Abstract] Clinical trials were conducted with 75 male and female patients with ischemic heart disease to evaluate the benefits of enteric adsorbents and hemosorption with and without antioxidants in the management of ischemic heart disease. The patients ranged in age from 20 to 60 years with case histories spanning 1 to 15 years. Trials with enteric adsorbents SKN_0-II (K-Mg form) and SKN_I (15 g t.i.d. before meals for 10-12 days) led to a reduction in nitroglycerin dosage and complete disappearance of anginal attacks after 4-5 days. Concomitantly, clinical chemistries revealed a two-fold reduction in lipid peroxidation, reduction in blood levels of cholesterol and other lipid fractions, decreased blood viscosity, and normalization of hemostatic mechanisms. Extracorporeal hemosorption using conventional techniques and UEG-01 apparatus in another group of patients (twice during 7-10 day interval) yielded equally impressive results, especiallly when hemosorption was employed in combination with antioxidants. On balance, the clinical impression was that the best results are to be expected when enteric adsorbents are used in the initial stages of atherosclerosis, hemosorption in stable ischemic heart disease, and enteric adsorbents in combination with antioxidants in progressive atherosclerosis, acute myocardial infarction, and in postinfarct cardiosclerosis. References 5 (Russian).

UDC 616.132.2-089.844:615.849.19

Case Study of Intraoperative Laser Coronary Angioplasty

907C0187D Moscow KARDIOLOGIYA in Russian Vol 29 No 6, Jun 89 (manuscript received 17 May 88) pp 117-118

[Article by R. S. Akchurin, A. A. Belayev, G. N. Zmiyevskiy, and S. E. Ragimov, All-Union Cardiological Scientific Center, USSR Academy of Medical Sciences; All-Union Scientific Research Institute of the Medical Industry, Moscow]

[Abstract] A cursory case study is presented of a 51 year old male patient with 95 percent occlusion of the descending anterior coronary artery treated with intraoperative laser angioplasty. The procedure was carried out under drug- and hypothermia-induced cardioplegia in conjunction with mammocoronary shunt surgery. Angioplasty was performed with an argon laser (0.48-0.52 μm, continuous 3.5 W power output for 3 sec), using a quartz fiber optic probe introduced into the descending coronary. The course of surgery was uneventful, with a six week follow-up showing patency of the vessel and normal myocardial function. Studies are currently underway to develop instruments for transcutaneous laser angioplasty to obviate the need for open heart surgery. Figures 2; references 8: 3 Russian, 5 Western.

UDC 578.832.1/577.213.3

Construction and Expression of Influenza Hybrid Hemagglutinin Gene Subtype H1/H3 in Escherichia Coli

907C0752A Moscow MOLEKULYARNAYA BIOLOGIYA in Russian Vol 24 No 2, Mar-Apr 90 (manuscript received 11 May 89) pp 408-416

[Article by V. A. Petrenko, S. M. Kipriyanov, G. A. Mizenko, A. M. Yeroshkin, G. F. Sivolobova, M. Yu. Rukavishnikov, Z. A. Akimenko, A. N. Boldyrev, and V. V. Kalashnikov, All-Union Scientific Research Institute of Molecular Biology, "Vektor" Scientific Industrial Association, Koltsovo, Novosibirsk Oblast]

[Abstract] Conventional genetic engineering technology was utilized in the construction and expression of a hybrid influenza virus hemagglutinin (HA) gene, in which a part of the surface epitope of HA H1 was replaced by a homologous H3 sequence. Plasmid pHH13 was constructed from plasmid pUR292 for microbial synthesis in Escherichia coli for production of hybrid HA (H1/H3) as a fusion protein with β-galactosidase. The chimeric protein reacted with antibodies specific for H1 and H3 determinants. Additional immunochemical studies demonstrated that the reaction evidently involved antibodies directed against the C-terminal HA domains. Figures 7; references 26: 14 Russian, 12 Western.

UDC 575.313

Cloning and Regulation of Gene Expression of *Eco*RV Restriction and Modification System

907C0752C Moscow MOLEKULYARNAYA BIOLOGIYA in Russian Vol 24 No 2, Mar-Apr 90 (manuscript received 23 Jan 89) pp 438-447

[Article by A. N. Kravets*, M. V. Zakharova, A. S. Solonin, N. P. Kuzmin, V. I. Tanyashin, L. I. Glatman**, A. F. Moroz**, and A. A. Bayev, Institute of Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences, Pushchino, Moscow Oblast; *Kiev Scientific Research Institute of Epidemiology and Infectious Diseases imeni L. V. Gromashevskiy, Ukrainian SSR Ministry of Health; **Scientific Research Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow]

[Abstract] A series of recombinant plasmids belonging to different compatibility groups were engineered to bear *Eco*RV restrictase and methylase functions. Expression in Escherichia coli of vector pVE8 demonstrated that the promoter was comparable in efficiency with phage λ early promoters and operated at 70 percent efficiency of the P_L promoter. Efficiency of the methylase gene promoter was two-fold lower than that of the restrictase promoter. In addition, in cases in which *Eco*RV was under the additional control of phage λP_R promoter, a 30- to 40-fold increase in restrictase synthesis was observed in conjunction with inactivation of the temperature sensitive repressor of phage λ-c1857. In the latter cases, production of *Eco*RV restrictase amounted to about 10 percent of the total cell protein content. Figures 3; tables 3; references 39: 13 Russian, 26 Western.

UDC 615.22:547.898].076.9

Effects of 12-Crown-4 and 15-Crown-5 on Cardio- and Hemodynamics

907C0771A Moscow KHIMIKO-FARMATSEVTICHESKIY ZHURNAL in Russian Vol 24 No 3, Mar 90 (manuscript received 20 Dec 88) pp 29-31

[Article by K. G. Gurbanov, G. V. Kovalev, N. V. Seredintseva, and O. V. Ivanov]

[Abstract] The effects of crown esters 12-crown-4 and 15-crown-5 on cardio- and hemodynamics were evaluated to assess their potential as cardiovascular agents in experiments performed on 2.5-3.5 kg cats. In the first series of experiments the cats were administered 20 mg/kg of the substances to analyze the dose-dependent effects. In the second series of experiments, the effects of the substances on the cardiovascular system following administration of 10 mg/kg of the substances were recorded. The 12-crown-4 substance had no effect on the cardiovascular system, while the 15-crown-5 substance affected arterial pressure, left ventricle contraction, heart rate, and other parameters. The most probable explanation for these observations is that the crown esters form complexes with sodium ions on cell membranes, thus inhibiting sodium-potassium metabolism and causing hypotension and negative inotropic and negative chronotropic effects. These data provide the grounds for searching for peripheral vasodilators among crown ester derivatives. Figures 1; tables 1; references 10: 7 Russian, 3 Western.

UDC 613.63/543.42+543.2

Features of Accumulation and Excretion of Organophosphorus Compounds in Rats

907C0691B Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 2, Mar-Apr 90 pp 227-235

[Article by M. A. Klisenko, L. G. Aleksandrova, Ye. A. Yershova et al.; Research Institute for Hygiene of Application of Pesticides and Polymers, Institute for Labor Hygiene and Occupational Diseases, Kiev]

[Abstract] A comparative analysis of parameters which determine toxico-kinetics of organophophosphorus in the first hours after peroral entry in a LD_{50} dose involved a study of Heterophos, Etaphos, Phosphamode and ESh-7. Quantitative characteristics of the toxikinetics of the pesticides in the stomach wall were closely connected with the toxicity indicator—LD_{50}. The rate of accumulation of the pesticides in the stomach wall in the first hours after ingestion was inversely proportional to their molecular weight. The study of ESh 7 showed the possibility of activation of the pesticides in the stomach wall with marked effect on their toxic properties. The LD_{50} of the pesticides in the early periods of intoxication depended directly upon the rate of pesticide accumulation in the stomach, duration of the biological half-life, the direction of their metabolism and the level of nonmetabolized pesticides in the liver tissue. Figures 3; references 16 (Russian).

UDC 577.152.311.35:547.297+414.7

O-substituted Alkylchloroformoximes as Substrates and Inhibitors of Cholinesterases

907C0529A Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 310 No 5, Feb 90 pp 1253-1255

[Article by Yu. Ya. Ivanov, V. B. Sokolov, T. A. Yepishina et al.; Institute of Physiological Active Susbtances, USSR Academy of Sciences, Chernogolovka, Moscow Oblast]

[Abstract] Development of a fundamentally new approach to synthesis of O-substituted oximes based on the use of available α-chloronitrose alkanes made it possible to produce O-acylated alkylchloroformoximes with the general formula $R^1C(O)ON=C(Cl)R^2$, $R^1=R^2=Me$(I), $R^1=Me$, $R^2=Et$(II), $R^1=Me$, $R^2=Pr$(III), $R^1=Et$, $R^2=Me$(IV), $R^1=Et$, $R^2=i\text{-}Pr$(V), $R^1=Pr$, $R^2=i\text{-}Pr$(VI), $R^1=CH_2Cl$, $R^2=PR$(VII), $R^1=CH_2Cl$, $R^2=i\text{-}Pr$(VIII) and also O-carbonylated alkylchloroformoximes with the general formula EtOC(O)ON=C(Cl)R, R=Me(Ia), R=i-Pr(IIa) and O-carbamoylated alkylchloroformoximes with the general formula $(Me)_2NC(O)ON=C(Cl)R$, R=Me (Ib) and R=i-Pr(IIb). Study of the effect of these substances on acetylcholinesterase [ACE], butyrylcholinesterase [BCE], on neuro-muscular conductivity and collection of data concerning their acute toxicity used preparations of human erythrocyte ACE and horse serum BCE. Since some oximes interacted with cholinesterases as substrates and others interacted as inhibitors, kinetic parameters of enzymic hydrolysis or inhibition respectively were determined. White mice were used to determine acute toxicity. The O-acylated alkylchloroformoximes studied are substrates of ACE and BCE. The toxicity of these compounds did not depend upon the kinetic parameters of their enzymic hydrolysis. O-carbamoylated alkylchloroformoximes inhibited both exzymes and the inhibition was irreversible. The toxicity of the ACE substrates did not depend upon the kinetic parameters of their enzymic hydrolysis. This new type of low-molecular substances (O-substituted alkylchloroformoximes) which interacts with ACE is an enzyme which plays an important role in nervous system functions and also with BCE, whose physiological role is still unclear. These compounds interact with these substances as substrates or inhibitors according to the structure of the O-substitute. References 10: 5 Russian; 5 Western.

UDC 616.13-004.6-085.547-092:615.225

Anticoagulant and Antiatherosclerotic Effects of 1-ethoxysilitran

907C0529B Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 310 No 5, Feb 90 pp 1256-1259

[Article by M. M. Rasulov, I. G. Kuznetsov, M. V. Velikaya et al.; Irkutsk Institute of Organic Chemistry, USSR Academy of Sciences, Siberian Department]

[Abstract] A detailed study of the effect of 1-ethoxysilitran [ES] on development of experimental atherosclerosis and coagulation hemostasis included experiments on 2.5-3 kg rabbits and production of a model of atherosclerosis by feeding the rabbits cholesterol (0.25 g/kg of weight) in their food daily. Determination of the level of cholesterol, total lipids, triglycerides and β-lipoproteins followed after one month on this diet. Experimental rabbits received ES and control rabbits received physiological solution. Experimental rabbits received [g5]g daily of a freshly prepared aqueous solution intramuscularly, intramuscular injection of ES in a 25 mg/kg dose, 50 mg/kg of ES daily, added to the food for 2 months, a 150 mg/kg dose of ES daily, added to the food or a 5 mg/kg dose of ES and cholesterol daily from the 1st day of the experiment. Experiments lasted 3 months. Determination of level of cholesterol, total lipids, triglycerides and β-lipoprotein, of cholesterol and triglycerides level in the liver and level of lipids and cholesterol in the thoracic section of the aorta and assessment of the degree of damage by atherosclerotic plaques followed sacrifice of the rabbits by air embolism. Parenteral administration of 25 mg/kg of ES for 2 months and 5 mg/kg for 3 months produced antiatherosclerotic and lipolytic action with reduction of the degree of injury by atherosclerotic plaques and hyperlipidemia. ES displayed no direct anticoagulant effect but shifts in the hemostasis system following its prolonged use showed that multiple doses of ES stimulates elaboration of endogeneous heparin which displayed its commonly known lipolytic and anticoagulant effect. ES's antisclerotic action and its lipolytic and anticoagulant effects and its low toxicity justifed its consideration as an angioprotector and an anticoagulant. References 12; 8 Russian; 4 Western.

UDC 612:829

Effect of Oxytocin on Integration of Post-synaptic Potentials in Mollusc Neurons

907C0529C Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 310 No 5, Feb 90 pp 1260-1263

[Article by V. A. Dyatlov; Institute of Physiology imeni A. A. Bogomolets, UkSSR Academy of Science, Kiev]

[Abstract] A study of the role of regulation of the functional state of chemoreceptors in neuronal integration of post-synaptic potentials used cholinoreceptors and dopamine receptors of a mollusc (apple snail) as chemoreceptors of the post-receptor neuron and the neuropeptide oxytocin as a regulating substance. Oxytocin may activate adenylate cyclase of the post-synaptic neuron, increase the level of cyclic adenomonophosphate and activate cAMP-dependent protein kinase. Experiments on identified and unidentified apple snail neurons in corresponding ganglia with and without their fixation used a microelectrode technique. Application of oxytocin produced temporary redistribution of conditions for rise of an action potential in the post-synaptic neuron and increased the likelihood of a rise of the action potential in case of short intervals between the post-synaptic potentials and decreased it for intervals greater than the constant time of drop of the post-synaptic potential. Change of processes of integration of the post-synaptic potential in mollusc neurons under the effect of small doses of oxytocin may be important for transmission of information in the nervous system. The effect of oxytocin on integration of post-synaptic potentials will facilitate sensory information, corresponding to the effect of a stronger stimulus and will impede transmission of weaker external signals. In case of spatial summation of post-synpatic potentials, the effect of oxytocin on the post-synaptic neuron will promote amplification of signals from those pre-synaptic signals whose dendritic branches have synaptic contacts on the post-synaptic axon neuron or those closer together if they are located on the unbranched part of the axon or situated at uniform distances from the post-synaptic soma in case of a branching axon. Even small changes of the amplitude of overall post-synaptic potentials in the presence of oxytocin near the threshold level may cause changes in information transmission which are essential to behavior of the animal. Changes in signal transmission between nerve cells, caused by oxytocin, are quite important and the regularity in temporary redistribution of probabilities of rise of action potentials in the presence of oxytocin may be one of the causes of plasticity of the neuron network. The mechanism of influence of oxytocin on integration of post-synaptic potentials involves an increase of the oxytocin induced activity of cAMP-dependent protein kinase, phosphorylating proteins of the cholinoreceptors and producing their conformational reconstruction and changes, due to this, of conditions of neuronal integration of the post-synaptic potentials. Figures 3; references 10: 6 Russian; 4 Western.

UDC 612.886.9-06:613.16

Gravitation Receptor Reaction in Response to Effect of Acceleration

907C0669 Kiev ZHURNAL USHNYKH, NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 2, Mar-Apr 90 pp 8-13

[Article by A. T. Pakunov; Chair of Otorhinolaryngology (head—professor A. A. Lantzov) and Morphology, Department of Central Scientific Institute of Leningrad (head—director of medical sciences V. F. Ivanov), Leningrad Sanitation and Hygiene Medical Institute]

[Abstract] A further study of gravitation receptor reaction involved reproduction of gravitational overloading with the use of a centrifuge with radius of rotation of 100 cm and 95 revolutions per minute. The force of centrifugal acceleration was 10.05 g and the duration of effect was 5 minutes. Experiments on 6 guinea pigs and 4 rabbits exposed to this acceleration showed a pronounced increase in gravitation reaction. All experimental animals remained motionless for the 1st 5 minutes after end of the effect of accleration. Marked disturbance of coordination of movement was noted for at least 1 hour. Electron microscopy study of the gravity receptor (utriculus) revealed rather pronounced disturbances in many structures: bulging of some of the pillar cells cytoplasm into the endolymphatic space, surrounding of cynocilia by cytoplasmic matrix, cytoplasm vacuolization, decrease of cell nuclei electron density and pronounced dilatation and clarification of calicous nerve terminals. The presence around the cynocilia of a matrix resembling cytoplasm indicated that bulging of part of the cytoplasm from the pillar cells prevents intense excitation of the receptors. It is possible that, after a 10-minute overload, the advantage of bulging of some of the cytoplasm from the pillar cells involves limitation of mobility of the cynociliae surrounded by the cytoplasmic matrix. Figures 4; references 12: 10 Russian; 2 Western.

UDC 612.821.001.57

Primary Processing of Visual Information Concerning Shape of Surfaces of Objects

907C0693A Moscow SENSORNYYE SISTEMY in Russian Vol 4 No 2, Apr-Jun 90 pp 145-151

[Article by N. F. Podvigin and A. M. Kuperman; Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences, Leningrad]

[Abstract] Experimental data have shown that the shape of images on the retina is represented at the subcortical level of the optic system by a time-space pattern of activity arising at the outlet of neurons in response to the image presented. This study analyzed these data with consideration of the hypothesis concerning representation at the level of the external geniculate body of cats of

the topological structure of isophotes (lines of equal brightness) on surfaces of objects. A method of experimental verification of this hypothesis was described and discussed. Lambertian smooth surfaces of 4 possible varieties of shapes were analyzed. Analysis of isophotes of the different surfaces showed the possibility of classifying the shape of a piece of a surface by assessing the shape and structure of a family of observed isophotes. The study showed that a family of lines of equal reaction of external geniculate body neurons have invariant properties and reflect the shape of the surface of objects under changing conditions of lighting and observations. Figures 4; references 24: 15 Russian; 9 Western.

UDC 612.81

Interhemispheric Electroencephalogram Asymmetry as Correlate of Negative Emotional Stimuli

907C0751A Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 16 No 2, Mar- Apr 90 (manucript received 10 Apr 87; after revision 27 Mar 89) pp 22- 30

[Article by V. F. Konovalov and I. S. Serikov, Institute of Biological Physics, USSR Academy of Sciences, Pushchino]

[Abstract] An analysis was conducted to determine correlation parameters between asymmetry of α and θ patterns on electroencephalogram (EEG) and negative stimuli in 13 right-handed males, 25-35 years old. The test system involved presentation of neutral and negative (80 V electric stimulus to finger) verbal stimuli with concomitant assessment of occipital and temporal EEG asymmetry. Baseline studies demonstrated a positive coefficient of asymmetry of the occipital α waves in 77 percent of the subjects, i.e., the α energetic profile was dominant in the right hemisphere, and 23 percent presented with negative coefficient indicative of the left hemisphere predominance. In the case of temporal recordings, a positive coefficient of asymmetry was observed in 46 percent of the subjects. Analysis of θ occipital and temporal recordings showed that positive coefficients of asymmetry prevailed in 92 and 100 percent of the subjects, respectively. Emotional stress was found to induce three types of change in EEG asymmetry. One type consisted of positive coefficients of asymmetry in the occipital regions in some subjects and in the temporal region in others. Another type involved negative occipital and temporal coefficients. Finally, a third type consisted of a mixed-type response characterized by equivalent positive and negative asymmetry of occipital and temporal α waves. Changes in the α and θ waves were greater in the occipital than in the temporal recordings, with changes in α exceeding changes in θ. The higher information content of the α waves was evidently due to their dominance in the brain wave spectrum and greater uniformity and correlation with the degree of activation of subcortical formation. In addition, the results indicate that EEG asymmetry may be used to assess the effects of negative emotional stress. Figures 4; references 32: 28 Russian, 4 Western.

UDC 612.014.421-073.97:612.82]:681.3

Comparison of Expert and Automatic Electroencephalogram Classification

907C0751B Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 16 No 2, Mar- Apr 90 (manucript received 9 Jan 89) pp 31-40

[Article by Ye. A. Zhirmunskaya and I. I. Goncharova, All-Union Scientific Research Institute of Technical Esthetics, Moscow]

[Abstract] A comparison was conducted on electroencephalogram (EEG) pattern classification based on expert opinion and results of computer processing. The EEG recordings were obtained from 98 clinically healthy men and women ranging in age from 25 to 46 years. The cohort consisted of 74 right-handed, 11 left-handed, and 13 ambidextrous individuals. Factor analysis of 15 EEG physiological groups and correlation with automatic spectrum analysis revealed that expert classification is based on not only subjective interpretations, but is supported by unambiguous objective criteria. Accordingly, the findings indicate that a computer-based probability-density approach to EEG pattern classification constitutes a reliable and rapid aid to EEG interpretation. Figures 3; tables 2; references 12: 6 Russian, 6 Western.

UDC 612.821:616.891

Functional Enhancement of Vision in Healthy Subjects by Synthetic Analog of Corticotropin Fragment

907C0751C Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 16 No 2, Mar- Apr 90 (manucript received 1 Mar 88) pp 151-154

[Article by V. V. Kolbanov, V. V. Nakorchemnyy, A. A. Nevzorov, V. N. Nezavibatko, M. A. Ponomareva-Stepnaya, L. Yu. Alfeyeva, and V. N. Potaman, Military Medical Academy imeni S. M. Kirov, Leningrad]

[Abstract] The effects of an adrenocorticotropin hormone$_{4-10}$ (ACTH) synthetic analog (Met-Glu-His-Phe-Pro-Gly-Pro) on vision were investigated on the authors at weekly intervals following intranasal instillation of 400-500 μg/person of the peptide in a double-blind study. Testing conducted 40-50 min after instillation demonstrated that in each case there was noticeable improvement in light sensitivity, color perception, and functional flexibility. The changes could not be attributed to any subjective factors or inadvertent training, but seemed to be correlated with the generally acknowledged improvement in central nervous system function induced by ACTH fragments. Tables 2; references 14: 11 Russian, 3 Western.

UDC 611.81:611.16:577.112.3

Location of Leu-encephalin in Brain Capillaries

907C0529D Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 310 No 5, Feb 90 pp 1263-1265

[Article by A. V. Lomakin and P.A. Motavkin; Vladivostok State Medical Institute]

[Abstract] A study of the brain stem of 4 human fetuses in the 2d half of pregnancy, a 10-year old boy who died suddenly, 6 pubescent male rabbits and 2 doves revealed data concerning new sources of leu-encephalin synthesis and provided information concerning its probable participation in the regulation of cerebral capillary blood circulation. Ultrastructural study of the capillaries indicated the probable source of leu-encephalin to be the endothelial cells, whose cytoplasm contains a limited quantity of peptide-ergic vesicles. The ultrastructural organization of the endotheliocyte indicated the active synthetic state of the cell and confirmed the local origin of the peptide vesicles. Endothelial cells of the brain capillary synthesize leu-encephalin, confirming the positive immunoreactivity of these elements and the presence of elementary peptide granules in them. Introduction of leu-encephalin into the perivascular space of animals produces persistent vasodilation of the pial arteries and this reaction reduces naloxan, blocking specific opioid receptors of the arteries and veins. This study and information from other similar studies showed that the presence of the opioid in the endothelium of capillaries in comparison with the effect of its action on vascular tonus justified the assumption that leu-encephalin, together with prostaglandin F_{2a}, calcitonin, substance P and vasoactive intestinal polypeptide, may be a relaxing factor in cerebral blood circulation. Figure 1; references 14: 5 Russian; 9 Western.

UDC 617-001.36-06:[616.8+616.43/.45]-085.275.4-092.9

Myelopid Management of Neuroendocrine Disorders in Traumatic Toxicosis

907C0705C Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 2, Mar-Apr 90 (manuscript received 7 Jul 88) pp 28-30

[Article by R. A. Samsonenko, V. N. Yelskiy, S. K. Yevtushenko, and A. V. Titiyevskiy, Central Scientific Research Laboratory, Chairs of Pathologic Physiology and Pediatric Neurology and Reflex Therapy, Donetsk Medical Institute imeni M. Gorkiy]

[Abstract] Anesthesized 180-200 g male rats were subjected to crush injury for 6 h and monitored for a 24 h decompression period (traumatic toxicosis) to assess the effects of pretreatment with myelopid (100 μg/rat, intraperitoneally) one day before the insult. Myelopid treated rats presented with a survival rate of 70-80 percent, whereas untreated animals sustained a mortality rate of 75 percent. Neuroendocrine studies demonstrated that traumatic shock induced significant depression of epiphyseal melatonin, slight elevation of plasma leu-enkephalin, significant elevation of plasma vasopressin, moderate depression of corticoliberin, elevation of ACTH, and depression of 11-hydroxysteroids. In the case of the pretreated animals, the drop in epiphyseal melatonin was attenuated, plasma leu-enkephalin was significantly depressed, and vasopressin was maintained at near-control level. In vitro studies with neuroendocrine tissues obtained from rats in shock were shown to be susceptible to myelopid in a predictable manner. Consequently, the beneficial effects of myelopid were evidently due to correction of imbalance in the melatonin-opioid system and depression of neurohypophyseal vasopressin levels. Tables 1; references 12: 10 Russian, 2 Western.

Health Ministry Press Conference Views Critical Medicine Shortages

Domestic Factories Closing

904D0240A Moscow RABOCHAYA TRIBUNA in Russian 26 Sep 90 p 4

[Article by I. Tyurina: "A Critical Situation"]

[Text] Yesterday a press conference was held for Soviet journalists on the subject of supplying the country with medicines.

At the entrance to the building of the Presidium of the USSR Academy of Medical Sciences, where the meeting was going on, a slip of paper had been tacked up: "Pharmacy Closed." Symbolic, isn't it?

As the journalists were told by the USSR deputy minister for health care, A. Moskvichev, the medicine situation is simply critical. It seems that the imported preparations that certain fortunate people have been able to buy in the pharmacies have yet to be paid for by the government. We owe Yugoslavia alone over 50 million convertible rubles for medicines already supplied to the country and sold to the population. Many Western firms are threatening to break their contracts with us, astonished that the government can find hard currency for tobacco but cannot pay for medicines.

Domestically produced preparations are so limited that only a third of the demand for them is being satisfied. But soon apparently even that will no longer be the case: factories are closing for ecological reasons, equipment has become outdated, there is a shortage of personnel, the pay is low, and so on.

Is there a way out of this situation? The general director of Soyuzfarmatsiya, A. Apazov, believes it is essential above all to wipe out immediately all debts to Western suppliers so that they don't abandon us for good at such a difficult moment. Moreover, the Health Ministry is appealing to the government, asking for another 200 million convertible rubles in order to cover the deficit at least to the end of the current year and the first half of the coming year. Also proposed for all of us, unfortunately, are the obvious measures: introducing output norms and raising prices for medical preparations. Can it really be that, after the "tobacco" and "bread" crises, we also face a "medicine crisis"?

You can read the interview with A. Apazov in an upcoming issue.

Imports Down

904D0240B Moscow TRUD in Russian 26 Sep 90 p 4

[Report by V. Belitskiy: "Hurry to the Life Line: One Social Prognosis"]

[Text] On Manezh Square I see a meeting. I'm struck by the unusual outfits and instruments held by the figures around the square: white cloaks tied in back, and white caps, rubber batons also whitened. On closer examination I notice small red crosses on the cloaks. Aha! Why, those are medical coats!

There is also something off about the meeting. Most of the people are wearing old flannel robes and pajamas that are very much the wrong size. Over their heads are pictures of disposable syringes, enemas, scalpels, and various tablets. People are lying on post-op beds placed haphazardly here and there. The crowd is growing quickly. From the direction of Dzerzhinskiy Square, a group of patients from the Silifosovskiy Institute is banging plaster casts, woefully out of "left-right" step, since some people have broken their left and some their right. From Tverskaya Square—apparently from Botkinskiy Hospital—a combined column with chronic internal organ ailments is being wheeled on gurneys.

The ill have come to the Manezh meeting both on their own, and with the help of relatives who for some reason are still getting around independently, and in first aid stretchers, so that their moans and laments will be heard. By whom? If you stand with your back to the Hotel Moskva, then to the right of us is Gosplan, behind us Revolution Square and a stone Marx, beyond the Kremlin Wall the government. A fitting backdrop for expressing one's concern for man. But wait up—no one's listening. No one cares that **the country has obviously run out of medicine and isn't about to get any.** And the whole country has lined up for what's left. This is not a line for trifles, for luxury items. This is a life line. Whoever's last in this line might as well have a burial service read over them. The only way out is to come out on this square.

I daydreamed a meeting like this at yesterday's press conference at the USSR Ministry of Health. How could one not draw oneself nightmarish scenes of strikes and meetings by patients when they heard the information that came out of the lips of the USSR deputy minister for health care, A. Moskvichev, and the general director of Soyuzfarmatsiya, A. Apazov, yesterday.

Here is their information for consideration:

- In 1990 only 72 per cent of the demand for medicine can be satisfied, including 39 per cent for domestic production.
- USSR Vneshekonombank [Bank for Foreign Economic Activity] is not paying its bill for medicines purchased abroad; 457 million convertible rubles' worth have been received from the capitalist countries and only 115 million paid. Firms have given notice that they are going to curtail shipments. If the contracts are broken, next year the country will not receive vital medicines that we do not produce.
- With the closing of several chemical and medicine factories, the losses of medicine will amount in monetary terms to another 800 million rubles, and the shortfall will increase from 2.45 billion to 3.5 billion rubles' worth.
- For next year, the Health Ministry's demand is valued at 7.5 billion rubles, whereas industry is promising to

provide 2.7 billion rubles' worth of medicine, or 36 per cent. But only on condition that they share with the USSR Ministry of the Medical Industry 170 million convertible rubles for the purchase of raw materials, half-finished products, and technology. If the hard currency isn't found, health care will get no more than 19.5 per cent of the necessary medicines.

- It will take at least 5 billion rubles of convertible rubles to fill the priority needs of sick people for next year. Even if they are allocated immediately, the preparations will start coming in no earlier than six months hence (such are the terms of the contracts). That is, until April of next year we will be left virtually without any possibilities for treatment. The situation is becoming especially tragic also because domestic pharmaceutical enterprises have so far concluded scarcely 10 per cent of their contracts with suppliers—which means that starting next year they will have nothing with which to make medicines.

Question: Is the social prognosis I envisioned at the Health Ministry press conference so far from reality?

Physicians are demanding: immediate payment of the bill to foreign firms for medicines already supplied us, which will require about 150 million convertible rubles; passage of a decision to include medicine-related production in the government order for next year; waiving taxes for three years for enterprises producing medicines; creating an alternative medicine industry in places equipped with modern technology, for which Western firms are prepared to provide the means; temporarily introducing fixed output of over-the-counter medicines.

One might say that these demands comprise a program of extraordinary measures for the defense of the people's health and very life for the period of transition to the market. And here is the second question: who is going to pass and implement this program—the government? The president? The soviets of various levels? An answer must be forthcoming immediately. After all, a line for medicines is a line for life, and you can't envy whoever winds up at the end of it.

UDC 616-084.3(47+57)

Effect of Dispensarization on Some Public Health Indicators and Work of Medical Institutions

907C0697A Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 1 Jan 90 pp 33-37

[Article by V. A. Minyayev, L. A. Alekseyeva and L. A. Zavyalova; 1st Leningrad Medical Institute imeni I. P. Pavlov]

[Abstract] "Basic trends of development of health protection of the people and reconstruction of USSR public health care in the 12th Five-Year Plan and up to 2000" states that continuous dynamic observation of Soviet citizens throughout their life is of paramount importance. Execution of this strategy requires consideration of changing needs of the people for different forms of medical assistance. Results of an experiment on universal dispensarization performed at Leningrad polyclinic N0. 31 under direction of the chair of social hygiene and public health organization Ist Leningrad Medical Institute imeni I. P. Pavlov provided much data for carrying out the strategy. This article described the state of medical assistance and presented indicators of medical work for 1985 at experimental sections divided into smaller units and including nearly 1000 adult inhabitants. Work on general dispensarization has been underway for 7 years at these sections and at control sections of identical composition with 1700 inhabitants. The study revealed many more patients of identical age-sex composition in the experimental sections after introduction of general dispensarization than in control sections (70.4 percent as compared to 55.8 percent) and detection of more diseases. General dispensarization produced a significant increase in disease detection, visits to physicians, improvement in diagnosis and curative measures and health improvement measures. Long-term active general dispensarization greatly decreased the frequency of severe forms of diseases, complications and aggravations of chronic diseases. It produced improved economic and social effects by saving hospital beds and time and saving labor resources. The overall dispensarization at terretorial sections divided into smaller units increased the effectiveness of territorial polyclinics and district physicians.

UDC 616-007-053.1-084

Problem Concerning Prevalence of Congenital Defects of Development

907C0697B Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 1, Jan 90 pp 41-43

[Article by B. Ya. Reznik and I. P. Minkov; Odessa Medical Institute imeni N. I. Pirogov]

[Abstract] Studies of the history of births and charts of 42,275 neonates, individual charts of development of 38,280 children from the 1st day after release from nursing homes (6 days) up to the age of 15 years and history of diseases and autopsy material from 4153 children ranging in age from birth to 15 years, observed and treated in a clinic, were performed from 1979-1987. Congenital developmental defects in the children from birth to the age of 15 years was 2.83 percent. This indicator was somewhat higher in the last 3 years in comparison with 1979-1981 (3.27 percent to 2.16 percent). Among the stillborn, congenital defects occurred in 10.2 percent of the children. Congenital defects among neonates equalled 13.8 per 1000. While the incidence in 1979-1981 was 7.1 percent, it was 18.2 percent in 1985-1987 and 22.4 percent in 1987 alone.

Major anomalies were listed and discussed. Malformations of the central nervous system and malformations of the gastrointestinal tract or cardiovascular system made up most of the defects. Methods of congenital defect preventions were presented and groups at high risk were identified. References 7: 6 Russian; 1 Western.

UDC 614.2:658.52.011.56

Some Problems of Development of Public Health Automatic Control System

907C0698A Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 1, Jan 90 pp 31-34

[Article by G. I. Chechenin; Novokuznetsk Group Medical Information-Computer Center of Municipal Health Department, Medical Cybernetics and Informatics, Novokuznetsk Institute for Advanced Training of Physicians]

roblems of Creating an Automatic Control System in Public Health Care" by Yu. M. Komarov, published in ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII No. 5, 1988, was discussed and criticized. Komarov pointed out deficiencies and errors in the attempt to improve public health control based on use of computer technology and an automatic control system. Komarov's analysis of deficiencies included presentation of means for overcoming these errors and means of reconstructing the entire operation for creating an automatic control system in public health care. Some of Komarov's conclusions and positions were disputed in this article. This article emphasized the unsuitableness of the public health system to operate under an automatic control system because of incorrect posing of questions concerning this matter due to the absence of methodical materials and trained personnel. 20 years of study have not produced a final version of methodical recommendations for development of a public health automatic control system. Means for improving the system were described and discussed. The importance of retaining competent personnel at public health computer centers and replacing obsolete computer equipment was emphasized. References 15 (Russian).

Performance of "Family Physician" Experiment in Outpatient-Polyclinic Institutions of Kazakh SSR

907C0698B Moscow ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 90 pp 9-12

[Article by G. G. Urmurzina, G. A. Zhetpisbayeva, N. F. Ilicheva and N. A. Belimova; Kazakh SSR Ministry of Health, Alma-Ata Institute For Advanced Training of Physicians, USSR Ministry of Health]

[Abstract] An experiment involving introduction of a new form of organization of work of the primary (family) physician, begun in Kazakhstan in September 1989, is aimed at elimination of inadequacies in the previous system annd complete satisfaction of the population's medical needs, especially the need for outpatient polyclinic assistance, improvement of quality of medical care, reduction of the number of unnecessary consultations and laboratory studies. Preparatory and organizational work involving a wide range of Kazakh Ministry of Health specialists and educational institutions with participation of public health agency directors, scientists and teachers of the Alma-Ata Institute for the Advanced Training of Physicians, USSR Ministry of Health preceded the experiment. At the 1st stage of the experiment, provision of training to the family physician by a number of therapists and, later, by pediatricians and then by rural physicians of many specialties permitted correction of the program as needed. The trained family physicians will work with 2 nurses and will provide care for 300-350 families (1000-1200 persons). The payment system was described. The training program lasted for 2 months. Pediatric training (including neonatology) made up 28 percent of the training time; therapy training made up more than 10 percent of the training time. Organization of labor, legislation, fitness for work expertise, health evaluation and collaboration with other specialists made up nearly 20 percent of the training time. Nearly 9 percent of the training time was devoted to care of infectious diseases. Training time was given to other areas of medicine and the training program was corrected as needed. Women made up 91 percent of the trainees. Results of the training program will be available in the 1st quarter of 1992 and they will permit objective evaluation of the new form of primary medical and sanitation assistance.

UDC 578.833.29:578.224].08

Virus-specific Proteins and RNA of Virus of Hemorrhagic Fever With Renal Syndrome

907C0662A Moscow VOPROSY VIRUSOLOGII in Russian Vol 35 Jan-Feb 90 pp 38-42

[Article by I. S. Lukashevich, Ye. A. Tkachenko, N. N. Lemeshko et al.; Belorussian Scientific Research Institute of Epidemiology and Microbiology, BSSR Ministry of Health, Minsk; Institute of Poliomyelitis and Viral Encephalites, USSR Academy of Medical Sciences, Moscow]

[Abstract] There is practically no information about biochemical strains of hemorrhagic fever with renal syndrome [HFRS] circulating in the USSR. This is the first article describing analysis of virus-specific proteins and RNA synthesized in cells infected by HFRS strains isolated in the USSR from rodents and man. It was shown that synthesis of 3 proteins G1, G2 and N with molecular weight of 70, 55-57 and 50 kD respectively was induced in the infected cells. These proteins appeared in cells infected by strains CG-1820, K-27 and P-360, isolated from HFRS patients. Analysis of virus-specific proteins of CG-1820 strains, indicated the different immunoprecipitating properties of sera of HFRS convalescents from European foci and Far Eastern foci in the USSR. A method permitting isolation of RNA from intracellular nucleocapsids was used to isolate viral RNAs. Electrophoretic study in PAG with 7 M of uric RNA showed that the HFRS virus included 3 classes of molecules (L, M, S) with molecular weights near to those described in the literature for representatives of the Hantavirus genus except for L-RNA, whose molecular weight was lower in the experiments than that described in the literature. Comparison of electrophoretic motility of RNA of strain CG-1820, isolated from Cl. glareolus in HFRS foci in the European USSR, and strain 4950 isolated from the Aral peninsula in the Far East showed a difference in their S-segment. Figures 3; references 27: 3 Russian; 24 Western.

UDC 616.98:578.833.29]-036.21-07

Characteristics of Endemic Foci of Hemorrhagic Fever With Renal Syndrome in Different Regions of the USSR

907C0662B Moscow VOPROSY VIRUSOLOGII in Russian Vol 35 No 1, Jan-Feb 90 pp 42-45

[Article by Ye. V. Leshchinskaya, Ye. A. Tkachenko, Ye. V. Ryltseva et al.; Institute of Poliomyelitis and Viral Encephalites, USSR Academy of Medical Sciences, Moscow; Khabarovsk Medical Institute, Scientific Research Institute of Epidemiology and Microbiology, Siberian Department, USSR Academy of Medical Sciences, Vladivostok, Municipal Clinical Infectious Disease Hospital No 4, Ufa]

[Abstract] Results of many years of observations provided material for comparative analysis of 5120 cases of hemorrhagic fever with renal syndrome [HFRS] from 9 different endemic foci of the disease. Analysis used criteria of severity of the disease (mild, moderate, severe) based on 3-13 years of observations, in most cases. Comparison of clinical, epizootic and laboratory data showed that the 2d serotype of HFRS virus and moderate and mild forms of the disease prevail in natural foci where the red-backed vole is found. Serotype I prevailed in foci where the leading epidemiological role is played by the field mouse and the Eastern Asiatic field mouse. In this case the disease progressed with great severity and many deaths. Most deaths were attributed to renal insufficiency with associated changes in organs and tissues. Comparison of clinical and serological data showed that, in any specific case, both serotypes may cause mild or severe forms of the disease. References 7 (Russian).

UDC 616.98:578.833.27]-022.39-078(581)

Virological Study of Sandfly Fever Cases in Afghanistan

907C0662C Moscow VOPROSY VIRUSOLOGII in Russian Vol 35 No 1, Jan-Feb 90 pp 45-47

[Article by S. Ya. Gaydamovich, N. V. Khutoretskaya, Yu. V. Azyamov et al.; Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] Isolation, for the 1st time in almost 40 years, of Neapolitan sandfly fever virus and Sicilian sandfly fever virus from patients who contracted the disease as members of a small contingent of Soviet troops serving in Afghanistan in May-August 1986-1987, was described and discussed. The viruses were isolated from 1-2 day-old mice and were identified by indirect immunofluorescence, complement-fixation reactions and biological neutralization tests. The disease proceeded with typical symptoms of sandfly fever including sudden onset with fever above 39 °C, severe headache, retro-orbital and muscle pains, and conjunctival distress with Pick syndrome. All patients suffered many bites. 3 strains of Neapolitan sandfly virus (Af-1008, Af-1038, Af-130) and 2 strains of Sicilian sandfly virus (Af-1028, Af-83) were isolated from patients' blood. The new Neapolitan strains differed slightly, in serological tests, from the original Sabin strain and differed completely from Toksana virus. Study of 104 paired sera from diagnosed patients showed an increase in antibody titers to the viruses in 87 persons while 16 persons had antibodies to both viruses with an increase of antibody titer in only one person. In 60 persons with tentative diagnosis of sandfly fever, 12 had antibodies to Neapolitan sandfly fever virus or Sicilian sandfly fever virus and one had antibodies to both viruses. The coincidence of biological neutralization and immunofluorescence data showed the value of these simple methods as diagnostic tests. No information on isolation of sandfly fever virus in Afghanistan was available previously. References 12: 4 Russian; 8 Western.

UDC 578.833.26.083.33+616.98:578.833.26]-078.33

Rapid Detection of Venezuelan Equine Encephalomyelitis by Method of Lanthanide Immunofluorescent Analysis

907C0662F Moscow VOPROSY VIRUSOLOGII in Russian Vol 35 No 1, Jan-Feb 90 pp 77-79

[Article by I. G. Kharitonenkov, S. Ya. Gaydamovich, V. G. Pomelova et al.; Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] Lanthanide immunofluorescent analysis [LIFA], based on the use of immunoglobulins labelled by ions of lanthanides (europium, terbium, samarium and praseodymium) and on a special method of recording fluorescence of these ions has attracted the attention of virologists developing new diagnostic methods. The LIFA method has not been used in diagnosis of arboviral infections before this. Development of a diagnostic test system based on LIFA to detect an arbovirus, alphavirus of Venezuelan equine encephalomyelitis, emphasized comparison of the sensitivity of this method with that of diagnosticums based on solid phase immunoenzymic analysis and an attempt to reduce the time of analysis of virus-containing material to a minimum. The diagnostic test system based on LIFA effectively revealed antigens of alphaviruses in model systems (saccharose-acetone antigens) and in biological material (brain suspensions, blood serum) and had several advantages over the diagnosticum based on solid phase immunoenzymic analysis. Sensitivity of LIFA was 4-8 times higher than that of solid phase immunoenzymic analysis. LIFA permitted detection of virus-specific antigens in materials with a wide range of concentrations of virus antigen in them against a high background of ballast protein. Use of 1-step variants of LIFA made possible a 20-30 minute reduction in time required for the diagnostic experiment. Figures 2; references 21: 6 Russian; 15 Western.

UDC 615.281:578.245.2].076.9

Antiviral Efficacy of Amyxin and Its Effects on Interferon Status in Mouse Hepatitis

907C0757F Moscow VOPROSY VIRUSOLOGII in Russian Vol 35 No 2, Mar- Apr 90 (manuscript received 23 May 89) pp 138-140

[Article by S. S. Grigoryan, A. M. Ivanova, and F. I. Yershov, Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow]

[Abstract] Mouse trials were conducted on Amyxin, a low molecular weight Soviet interferon inducer, via infection with mouse hepatitis virus. Amyxin, 2,7-bis[2-(diethylaminoethoxy)-9-OH dihydrochloride, was administered orally in a dose of 4 mg/mouse to 16-18 g mice 1 to 7 days before the animals were infected orally with 0.2- 0.3 ml of a 30-40 percent suspension of the mouse hepatitis virus. Amyxin was found to induce a rapid rise in serum interferon, reaching a maximum of 1280 U/ml in 24 h (20-80 U/ml in 48-72 h), with reduction of the mortality rate to 40-50 percent if infection followed in 24-72 h, versus a control mortality rate of 100 percent. However, infection after 72 h reduced the survival rate to 10-20 percent, and after 7 days the mortality rate was 100 percent. Concomitant evaluation of the interferon status showed that amyxin led to a 8- to 10-fold increase in interferon-α and -γ production by splenic lymphocytes over control levels. In untreated mice, infection resulted in depression of interferon-α and -γ synthesis. These observations demonstrated that prophylactic administration of amyxin was effective in reducing mortality due to mouse hepatitis virus and in improving the interferon status of animals. Accordingly, the data indicate that amyxin should be considered for prevention of human hepatitis A. Figures 2; tables 2; references 7: 4 Russian, 3 Western.

22161
21

NTIS
ATTN: PROCESS 103
5285 PORT ROYAL RD
SPRINGFIELD, VA 22161

Foreign Broadcast Information Service (FBIS) and Joint Publications Research Service (JPRS) publications contain political, military, economic, environmental, and sociological news, commentary, and other information, as well as scientific and technical data and reports. All information has been obtained from foreign radio and television broadcasts, news agency transmissions, newspapers, books, and periodicals. Items generally are processed from the first or best available sources. It should not be inferred that they have been disseminated only in the medium, in the language, or to the area indicated. Items from foreign language sources are translated; those from English-language sources are transcribed. Except for excluding certain diacritics, FBIS renders personal and place-names in accordance with the romanization systems approved for U.S. Government publications by the U.S. Board of Geographic Names.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by FBIS/JPRS. Processing indicators such as [Text] or [Excerpts] in the first line of each item indicate how the information was processed from the original. Unfamiliar names rendered phonetically are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear from the original source but have been supplied as appropriate to the context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by the source. Passages in boldface or italics are as published.

SUBSCRIPTION/PROCUREMENT INFORMATION

The FBIS DAILY REPORT contains current news and information and is published Monday through Friday in eight volumes: China, East Europe, Soviet Union, East Asia, Near East & South Asia, Sub-Saharan Africa, Latin America, and West Europe. Supplements to the DAILY REPORTs may also be available periodically and will be distributed to regular DAILY REPORT subscribers. JPRS publications, which include approximately 50 regional, worldwide, and topical reports, generally contain less time-sensitive information and are published periodically.

Current DAILY REPORTs and JPRS publications are listed in *Government Reports Announcements* issued semimonthly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 and the *Monthly Catalog of U.S. Government Publications* issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The public may subscribe to either hardcover or microfiche versions of the DAILY REPORTs and JPRS publications through NTIS at the above address or by calling (703) 487-4630. Subscription rates will be provided by NTIS upon request. Subscriptions are available outside the United States from NTIS or appointed foreign dealers. New subscribers should expect a 30-day delay in receipt of the first issue.

U.S. Government offices may obtain subscriptions to the DAILY REPORTs or JPRS publications (hardcover or microfiche) at no charge through their sponsoring organizations. For additional information or assistance, call FBIS, (202) 338-6735,or write to P.O. Box 2604, Washington, D.C. 20013. Department of Defense consumers are required to submit requests through appropriate command validation channels to DIA, RTS-2C, Washington, D.C. 20301. (Telephone: (202) 373-3771, Autovon: 243-3771.)

Back issues or single copies of the DAILY REPORTs and JPRS publications are not available. Both the DAILY REPORTs and the JPRS publications are on file for public reference at the Library of Congress and at many Federal Depository Libraries. Reference copies may also be seen at many public and university libraries throughout the United States.