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BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 96

EAST EUROPE

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BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 96

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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I. BIOMEDICAL SCIENCES

Biochemistry

USSR UDC 616-001.17-07:616-008.9-074

SOME FEATURES OF CONNECTIVE TISSUE METABOLISM IN BURN DISEASE

Moscow KLINICHESKAYA MEDITSINA in Russian Vol 56 No 7, Jul 78 pp 111-113 manuscript received 21 Dec 77

ZAYETS, T. L., BERMAN, A. A., DOLGINA, M. I. and ZAYDENBERG, M. A., Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR; Institute of Transplantation of Organs and Tissues, Ministry of Health USSR, Moscow

[Abstract] A study is reported of the changes which accompany destructive and proliferative processes after a thermal burn, i.e., in the period of burn sickness. Forty patients aged 16 to 55 had suffered burns of 20 to 60% of the body surface: of these, 10 to 40% had IIIb degree burns, 2% IV degree. Assays were made of blood serum total protein, sialic acids, total content of seromucoids and fractional seromucoid composition; of content of hydroxyproline and creatine in 24-hr urine. Practically all indexes had changed as compared with donor controls. Hydroxyproline excretion markedly increased; content of a number of the seromucoid fractions increased and a pronounced redistribution of the percent ratio of these fractions appeared. Maximum development of the catabolic processes occurred in the period of toxemia and septicotoxemia when the patients showed sharp drop in weight, attributed largely to breakdown of muscle tissue and fat cells. The hydroxyproline increase was attributed to the increased decomposition of collagen in the first days of the burn and of the thermally damaged skin later. The reasons for shifts in the seromucoid fractions are discussed. References 10: 5 Russian, 5 Western.

USSR UDC 616-001.8:546.267:577.17.049

STUDY OF THE CONTENT OF IRON, COPPER, ZINC AND COBALT AND OF THE ACTIVITY OF RESPIRATORY METALLO-ENZYMES IN ANIMAL TISSUES EXPERIENCING TOXIC HYPOXIA

Kiev UKRAINSKIY BIOKHIMICHESKIY ZHURNAL in Russian Vol 50 No 4, Jul/Aug 78 pp 424-428 manuscript received 10 Jan 77

POPOV, I. P., Department of Pathological Physiology of the Donetsk Medical Institute imeni M. Gor'kiy

[Abstract] Histotoxic hypoxia was induced in rabbits by intravenous injection of sodium cyanide; studies were made on tissues removed from the killed animals. The title trace elements were assayed in the brain, myocardium and kidneys; non-heme iron was assayed in the mitochondria of the brain. Activities of succinate dehydrogenase, NAD-H_2-cytochrome-c-reductase and

NAD-H_2-diaphorase were also assayed. Determinations were made by published methods. Succinate dehydrogenase activity was not essentially changed. Activities of the two other enzymes cited increased in the brain, myocardium and kidney. Tissue iron, copper, zinc and cobalt levels increased; the iron content and NAD-dependent enzyme activity was positively correlated. Content of non-heme iron and NAD-H_2-cytochrome-c-reductase activity in the brain mitochondria increased; a direct correlation between these two contents apparently exists. References 25: 19 Russian, 6 Western.

USSR

UDC 616.981.553-092.9-07;616-008.954.52-074

RELATIONSHIP BETWEEN CHOLINERGIC MECHANISMS AND CATECHOLAMINE METABOLISM IN BOLULISM

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian No 4, 1978 pp 490-495 manuscript received 28 Apr 77

CHESNOKOVA, N. P., Department of Pathologic Physiology, Saratov Medical Institute

[Abstract] Experiments were conducted on the tissue levels and excretion of catecholamines in intact, pancreatectomized, and pancreatectomized 3-4 kg cats treated with botulinum type C toxin or tetanus toxin (2.5 mg/kg) to establish the relationship between cholinergic mechanisms and catecholamine metabolism under these conditions. Studies with pancreatectomized animals showed depressed urinary excretion of epinephrine, no effect on urinary levels of norepinephrine, increased urinary excretion of vanilyl mandelic acid, depletion of adrenal catecholamines and no change or an increase in the catecholamine levels in various other tissues and organs. Administration of a single compensatory dose of acetylcholine (0.5 ml/3 kg of 1:1000 dilution) reversed these changes in the pancreatectomized cats. Administration of either toxin to such animals markedly potentiated the changes in the tissue levels and excretion of catecholamines, and promoted a general depression of tissue levels. These findings indicate that inhibition of cholinergic mechanisms leads to changes in catecholamine metabolism directed at diminishing their concentration. References 9: 3 Western, 6 Russian.

USSR

UDC 547.789.6'415.3;542.938

HYDROLYSIS OF AMIDE ANALOGS OF PENICILLINS

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 593-598 manuscript received 13 Feb 78

VEYNBERG, G. A. and BELEVICH, YE. M., Institute of Organic Synthesis, Academy of Sciences Latvian SSR, Riga

[Abstract] Several amide derivatives of penicillanic acid were subject to acid or alkaline hydrolysis or to enzymatic hydrolysis by penicillinase, with the products identified by means of electrophoresis and thin layer chromatography. The resultant data demonstrated that acid hydrolysis led to penicillanic acid, while enzyme hydrolysis led to the formation of peniciec, N-formyl peniciec acid, and secondary amines. Alkaline hydrolysis resulted in the formation of secondary amines and peniciec acid. References 6: 1 Western, 1 Czech, 4 Russian.

USSR

UDC 591.044.82:612.015.33

HeLa CELL DNA REPLICATION AFTER GAMMA IRRADIATION. I. DNA SYNTHESIS IN CELLS SUBJECTED TO HIGH DOSES OF GAMMA RADIATION IN THE G_1 PHASE

Leningrad TSITOLOGIYA in Russian No 8, 1978 pp 962-966 manuscript received 13 Jun 77

SHEYKINA, T. A., BELOSTOTSKAYA, G. B. and ARKHIPOV, M. V., Laboratory of Molecular and Radiation Biophysics, Leningrad Institute of Nuclear Physics, Academy of Sciences USSR, and the Plant Variability Biophysics Laboratory, Agrophysical Institute All-Union Agricultural Academy imeni Lenin, Leningrad

[Abstract] ^{3}H-thymidine (HT) incorporation was used to follow DNA synthesis in HeLa cells subjected to gamma irradiation from a ^{60}Co source during the G_1 phase. The results showed that exposure to 5 krads did not significantly affect HT incorporation during the subsequent S phase vis-a-vis unirradiated control cells. Cytophotometric studies showed that the amount of DNA per nucleus doubled at the end of the S phase in irradiated and unirradiated cells. Exposure of HeLa cells to 10-30 krads yields a dose-dependent decrease in DNA synthesis and a corresponding prolongation of the S phase. Figures 4; references 6: 2 Western, 4 Russian.

HUNGARY

THIN LAYER CHROMATOGRAPHIC EXAMINATION OF THE LIPIDS OF HUMAN ERYTHROCYTES TREATED WITH ADENOVIRUSES

Budapest ORVOSTUDOMANY in Hungarian Vol 28, No 3-4, 1977 pp 299-308 manuscript received 15 Jun 77

LENGYEL, Anna, KLEMBALA, Marta, NASZ, Istvan, Semmelweis Medical University, Institute of Microbiology and National Public Health Institute, Budapest

[Abstract] Results of previous experiments with adenovirus types 8, 9 and 10 raised the possibility that the changes occurring in the lipids of the red blood cell (rbc) membranes may serve as models of the chemical processes arising from the interaction between adenovirus and the cell membrane. Adenovirus types 13 and 17 from the same subgroup as well as types 5 and 12 from subgroup III and type 7 from subgroup I were added to the previous types in the present experiments. The resulting changes were evaluated also in terms of possible similarities to the lipid changes induced by influenza virus types A and B. The strains were grown in single layer and suspension HEp-2 cultures, in a Parker 199 solution containing 3% rabbit serum. After repeated freezing and thawing, the cultures were centrifuged twice at 300 rpm. The supernatant liquid, containing 2000-6000 HA units, i.e., 1000-3000 $TCID_{50}$/ml, was used to treat the rbc-s. Similarly treated, non-infected culture extracts were used as controls. The lipid residues of the rbc extracts were studied using a two-dimensional thin layer chromatographic method with Kieselgel G as adsorbent and 250 micron thickness. The test was run at room temperature with a 65 : 25 : 4 mixture of chloroform-methanol-water and a 4 : 1 : 5 mixture of butanol-gl. acetic acid-water to a distance of 150 mm in both directions. Lipids not generally occurring in all donors, spots which changed on treatment with non-infected cell extract and scattered changes in response to the virus treatment were excluded from the results. On this basis, 36 of the compounds from untreated rbc-s were evaluated 22 of which showed regular qualitative changes in response to treatment with one or several adenovirus types. These changes are presented in several tables in the article. Of the 8 adenoviruses used (types 5, 7, 8, 9, 10, 12, 13, 27), some lipids showed changes in response to a single type, others did so in response to two or more types. Twelve changes were type specific and all occurred with types belonging to hemagglutination subgroup II, most often involving type 8. Six lipids reacted with two types, one lipid each reacted with three and four types, respectively. Two lipids underwent change in response to all 8 viral types; however, the changes were not identical with all types. The complex lipids showing the most changes in response to the adenoviruses belonged among the chemical group of lecithine, lysolecithine, cephaline and lysocephaline. These may, directly or indirectly, represent those points in the lipoprotein stratum of the cell membrane which are common receptors of the adenoviruses, and of both the adenoviruses and influenza viruses. Figures 2; references 18: 6 Hungarian, 12 Western.

USSR

DIPOLE COOPERATIVE MODEL OF IONIC CHANNELS OF EXCITABLE BIOMEMBRANES. CONDUCTANCE OF IONIC CHANNELS

Moscow BIOFIZIKA in Russian Vol 23, No 4, Jul/Aug 78 pp 645-648 manuscript received 2 Jun 76

PASTUSHENKO, V. F., CHIZMADZHEV, YU. A. and KALANDADZE, I. L., Institute of Electrochemistry, Academy of Sciences USSR, Moscow

[Abstract] The mechanism for regulation of the conductivity of an ionic channel of a biomembrane is not known. An empirical method to clarify the problem suggests the formation of an ionic channel model wherein the subunits of the lipoprotein complex are not independent but interact with each other. The system of interacting particles can be viewed by the method of a self-consistent field; a kinetic equation was developed to define the shape of the oriented subunits. Conductivity of an ionic channel, as a function of a shifted charge, had an S-shaped curve. Kinetic curves of conductivity were calculated and compared with data of the Hodgkins-Huxley model with respect to the sodium channel. Agreement and disagreement of the data are discussed. Figures 2; references 7: 2 Russian, 5 Western.

USSR

UDC 616-006-092-033.2:615.849.19

EFFECT OF A HIGH-POWER PULSE LASER RADIATION TREATMENT OF METASTASIZATION OF EXPERIMENTAL TUMORS

Leningrad VOPROSY ONKOLOGII in Russian No 5, 1978 pp 41-45

MOSKALIK, K. G., LAZO, V. V., KOZLOV, A. P., IL'CHENKO, A. M. and SEREBYAKOV, V. A., High Energy Laboratory (directed by Dr of Technical Sciences A. P. Kozlov) of the Order of Labor's Red Banner Scientific Research Institute of Oncology imeni Prof. N. N. Petrov, Ministry of Health USSR, (directed by Corresponding Member of the Academy of Medical Sciences of the USSR N. P. Napalkov)

[Abstract] Lewis carcinomas or B15 melanomas were injected under the skins of 356 male mice, and 4 series of tests were carried out. Energy density was tested in the first two series, and duration of laser radiation treatment in the others. The radiation density of series 1 was 400 joule/cm^2, of series 2, 1000 joule/cm^2, and of 3 and 4, 800 joule/cm^2 with duration varying from 1 to 6 ms. The laser radiation source was a "Pul'sar 5000." Results indicated some reduction in the number of metestases in the lungs of mice who had unamputated tumors of the extremities. The duration tests

showed that the numbers of metastases in the lungs of those mice exposed to a 6 ms radiation was less than in the control group. In some series, particularly with the Lewis carcinomas, a reduction in tumor size was noted after laser radiation. Thus high-power laser radiation treatment of tumors was shown to reduce the tumors without causing metastasization. Figures 4; references 15: 4 Russian, 11 English.

USSR

UDC 615.846.015.4:612.014.462.5

HIGH FREQUENCY CURRENT CHARACTERISTICS AND TISSUE COAGULATION

Moscow MEDITSINSKAYA TEKHNIKA In Russian No 4, 1978 pp 44-47 manuscript received 2 Dec 77

BELOV, S. V., All-Union Scientific Research Institute of Medical Instrumentation, Moscow

[Abstract] Based on theoretical considerations and experiments conducted on mouse tissues the following parameters were found to yield optimum tissue coagulation using surgical electrocoagulators: $1kV < U < 1.3$ kV and $1\ \mu sec < \Delta < 2\ \mu sec$, where U represents the amplitude and Δ the duration of the impulse, with the employment of at least a 1000 impulses per application. Figures 4; references 7: 2 Western, 5 Russian.

USSR

MAGNETOBIOLOGICAL EFFECTS IN MEDICINE

Riga NAUKA I TEKHNIKA in Russian No 8, Aug 78 p 5

Unsigned

[Abstract] Magnetobiology is a branch of science concerned with the effect of external natural or artificial magnetic fields on living systems (cell, organism, population) as well as with the magnetic fields generated by living organs. An interinstitutional commission to deal with problems in magnetobiology was established in the Latvian SSR in 1971. It held an international symposium in 1972 in which neuropathologists, neurosurgeons, and psychiatrists from other Baltic republics of the Soviet Union as well as from other socialist countries participated. A seminar on the applications of magnetobiology in medicine was held in April 1978 at the Latvian

Neurosurgical Center, with the participation of Moscow scientists Yu. A. Kholodov ("Reception of Magnetic Fields by Man") and I. M. Midbreyt ("Application of Magnetic Fields in Traumatology and Orthopedics") as well as of Riga scientists R. P. Kikuta ("Magnetohydrodynamic Aspects of Taansport Phenomena in Blood") and I. G. Magone ("Effect of Magnetic Fields on the Aging Processes").

USSR UDC 576.8.51.095.15:536.48

EFFECT OF LOW TEMPERATURES (-196° C) AND CRYOPROTECTORS ON CERTAIN BACTERIAL SPECIES

Moscow MIKROBIOLOGIYA in Russian No 3, 1978 pp 446-449 manuscript received 16 May 77

TSUTSAYEVA, A. A., SAFONOVA, T. S., MIKULINSKIY, YU. YE., VOROB'YEVA, I. N. and ITKIN, YU. A., Institute for Problems of Cryobiology and Cryomedicine, Academy of Sciences Ukrainian SSR

[Abstract] The bacteria Escherichia coli, Serratia marcescnes, and Staphylococcus aureus 209 were cultivated on a meat-peptone medium for 18 hours at 37° C, then chilled in polyethylene ampules of 1.5 ml volume at a cooling rate of 400° per minute. Then they were reheated in water at 41°. Polyethylene oxide and glycerine in 5, 10, and 15% concentrations were used as cryoprotectors, Morphological, culture and physiological features of surviving bacteria were measured. Results indicated that the cryoprotector did not reduce the number of viable bacteria in the ampules, but when applied to the culture base it inhibited growth in 5 and 10% concentrations, and had a bacteriostatic effect on gram negative bacteria in the 15% concentration. There was a clear difference in low temperature sensitivity of gram-positive and gram-negative bacteria, apparently due to the greater complexity of cell wall structure in the latter, which showed more low temperature instability. Figures 2; references 11: 4 Russian, 7 Western.

USSR

UDC 576.858.25.095.38:576.895.771

EXPERIMENTAL STUDIES ON THE INTERRELATIONSHIP BETWEEN MOSQUITOES AND TAHYNA VIRUS

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 4, 1978 pp 59-63 manuscript received 22 Nov 77

PCHELKINA, A. A. and SELEDTSOV, I. I. (deceased), Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] Mosquitoes of several species were exposed to Tahyna-92 virus on swabs in order to determine their susceptibility as carriers. Virus neutralization and infectivity titers on suckling mice indicated that the virus multipled in Aedes punctor and A. communis, while surviving passively without multiplication in Culex pipiens molestus and A. aegypti. The studies also showed that A. aegypti was more susceptible to infection than c. p. molestus. All species were capable of transferring the virus to healthy mice during feeding. References 13: 4 Czech, 1 Western, 7 Russian.

USSR UDC 632.937.12

INFLUENCE OF TEMPERATURE ON BIOLOGICAL INDICATORS OF VARIOUS TRICHOGRAMMA SPECIES AND POPULATIONS

Kiev VESTNIK ZOOLOGII in Russian No 4, Jul/Aug 78 pp 52-59 manuscript received 16 Dec 76

FRANTSEVICH, L. A., Ukrainian Scientific Research Institute of Plant Protection

[Abstract] A study was made to determine the influence of temperature, from 15 to 35° C under natural conditions with 75-80% humidity, on several species and populations of trichogramma: brown (T. euproctidis Girault) and yellow (T. cacoeciae March.) in Luchistoye village of the Crimean Oblast, Izmaylovskiy Rayon of Odessa Oblast and Zastavna city of Chernovtsi Oblast. A statistical analysis of the results indicates that the growth time decreases while the growth rate and the fertility increase with rising temperature. The ratio of male to female plants, always larger than unity, also changes with temperature and peaks at about 20-25°C. On the basis of these data and the climatic map, it is possible to estimate the number of trichogramma crops per season throughout the territory of the Ukraine: from four in the northern zone to ten in the southern zone, based on the optimum number of degree.days above the threshold (8.3-10°C). Figures 4; references 13: 8 Russian, 2 Polish, 2 German, 1 Western.

USSR UDC 612.017.2

HEMODYNAMIC CHANGES IN HIGH ALTITUDE HYPOXIA

Moscow FIZIOLOGIYA CHELOVEKA in Russian No 3, 1978 pp 469-474 manuscript received 17 Jan 77

MIRRAKHIMOV, M. M., KHAMZAMULIN, R. O. and MURATALIYEV, T. M., Kirghiz State Medical Institute, Frunze

[Abstract] Circulatory adaptation to high altitude hypoxia (3200 m) was investigated in the case of 15 healthy male volunteers ranging in age from 20 to 25 years. Over a 30-day period of observation the hemodynamic data showed a statistically significant pulmonary hypertension by the 3rd day of adaptation, which gradually abated to control levels by day 30, However, stress tests conducted at any time during the 30-day period of high altitude hypoxia elicited a much greater pulmonary hypertensive effect in the 'adapted' subjects than in controls at sea level. Additional changes in the experimental subjects consisted of increased cerebrovascular blood flow, increased peripheral resistance, prolongation of the isometric phase of cardiac contraction, and a decrease in the cardiac output time. The latter changes were much more pronounced during the initial few days of adaptation. Figures 3; references 23: 10 Western, 13 Russian.

USSR UDC 591.55

MODEL OF GLOBAL ECOLOGY-ECONOMY INTERACTIONS IN THE BIOSPHERE

Kiev AVTOMATIKA in Russian No 4, 1978 pp 78-85 manuscript received 9 Mar 78

KRAPIVIN, V. F., MOISEYEV, N. N. and SVIREZHEV, YU. M., Institute of Radiotechnology and Electronics, Academy of Sciences USSR

[Abstract] A mathematical model is described for quantitative evaluation of ecologic and economic factors in the biosphere using FORTRAN-4 computer language. The biogeocenotic structure of the biosphere model under consideration is designed to take into consideration anthropogenic factors and consists, basically, of the following compartments: atmosphere, ocean, dry land area, pollution, temperature, population density, O_2 and CO_2 levels, plant masses, mineral resources, etc. Figures 7; references 11: 3 Western, 8 Russian.

USSR/GDR UDC 612.172.015.1-06;612.275.1

EFFECTS OF ALTITUDE HYPOXIA AND COLD ADAPTATION ON MYOCARDIAL ADENYLATE CYCLASE ACTIVITY IN THE RAT

Moscow VOPROSY MEDITSINSKOY KHIMII IN Russian No 4, 1978 pp 486-490 manuscript received 1 Sep 77

MEYERSON, F. Z., PSHENNIKOVA, M. G., GOLUBEVA, L. P., JANISCHEWSKI, E., KRAUSE, E. G., and WOLLENBERGER, A., Laboratory of Cardiac Pathophysiology, Institute of General Pathology and Pathologic Physiology, Academy of Medical Sciences USSR, Moscow, and the Department of Cellular and Molecular Cardiology, Central Research Institute of Cordiovascular Regulation, Academy of Sciences of the GDR, Berlin-Buch, GDR

[Abstract] Outbred albino male rats, 3-4 months old, were employed in investigations on the effects of cold (+3° to -2°C for 38 days) or hypoxic adaptation (6000 m equivalent in pressure chamber, 6 hr/day, 5 days/week for 5-6 weeks) on myocardial adenylate cyclase (AC) activity. Comparison of AC activities showed elevation in cold adapted rats vis-a-vis control rats, while the average activity for hypoxia adapted rats were comparable to that for control rats. Further in vitro studies on activation of myocardial AC by norepinephrine, sodium fluoride, or quanilyl imidodiphosphate showed that the enzyme of both experimental groups was far less susceptible to these agents than that of control rats. The latter observation will require further studies to elucidate the mechanism underlying this difference. Figures 1; references 14: 3 Russian, 11 Western.

USSR UDC 616.995.1-036:21:625.1(571.5)

HELMINTHOLOGIC FEATURES IN THE EASTERN PART OF THE BAIKAL-AMUR RAILWAY [BAM]

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 4, 1978 pp 3-7 manuscript received 28 Feb 78

DOVGALEV, A. S., ZHELEZNIKOVA, V. V., KIKOT, V. I., POSOKHOV, P. S. and SHPIL'KO, V. N., Khabarovsk Institute of Epidemiology and Microbiology, and the Khabarovsk Medical Institute

[Abstract] Epidemiologic studies were conducted on the helminthologic situation in the eastern regions of BAM [Baikal-Amur Railway], involving the Dzheltulakskiy, Zeyskiy, and Selemdzhinskiy rayons of the Amurskaya oblast, as well as the Verkhne-Bureinskiy, Solnechnyy, and Komsomol'skiy rayons in the Khabarovsk kray. This survey, conducted during the 1973-1976 period, encompassed 2000 local residents, 500 wild animals, and 12 species of synanthropic animals, as well as a variety of mollusks, crustaceans, and fish that serve as trematode hosts. The diseases found prevalent in these areas were echinococcosis, trichinellosis, cysticercosis, nanophyetosis, metagonimiasis, diphyllobothriasis, hymenolepiasis, and enterobiasis. In some villages paragonimiasis was encountered. Further investigations demonstrated a variety of primary and intermediate hosts in the water bodies which could easily sustain outbreaks and form new active foci of helminthiasis. These findings shows that helminthiasis constitutes a real danger from the public health point of view and active measures must be taken to protect the railway crews and resident population. References: 18 Russian.

USSR UDC 616.995.122.21-084.449:615.28:632.951

FIELD TRIALS OF MOLLUSCOCIDES IN BITHYNIA INFLATA BIOTOPES IN THE WESTERN SIBERIAN FOCUS OF OPISTHORCHOSIS

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 4, 1978 pp 13-18 manuscript received 17 Feb 78

BEER, S. A., MIKHAYLITSYN, F. S., ZAVOYKIN, V. D., GERMAN, S. M. and BEKHLI, A. F., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

[Abstract] Studies conducted from 1972 to 1975 in the Ob-Irtysh river focus of opisthorchosis in the Kargasokskiy rayon of the Tomsk oblast demonstrated that treatment of water bodies with 2'-chloro-4'-nitrophenyl-amide-5-chlorosalicylic acid or its ethanolamine derivative or sodium salt decreased the population of the mollusc host Bithynia inflata to 4% viable

individuals after one week. After 5 years the number of B. inflata specimens did not exceed 1% of that seen before applications of the molluscocides. The population densities of other hydrobionts almost fully recovered by the 2nd year. Four years after the molluscocide program was initiated infestation of carp young with opisthorchosis larvae was 20-fold lower than before the program. Tables 3; references: 13 Russian.

USSR UDC 612.017.1:612.27

IMMUNE SYSTEM AND NONSPECIFIC FACTORS OF PROTECTION IN HUMAN ADAPTATION TO HIGH ALTITUDES

Frunze ZDRAVOOKHRANENIYE KIRGIZII in Russian No 7, Mar/Apr 78 pp 12-15

MIRRAKHIMOV, M. M., KITAYEV, M. I., TULBEKOV, B. T., SOBUROV, K. A. and AMANTUROVA, K. A. Institute of Physiology and Experimental Pathology of High Altitudes, SSR Academy of Sciences Kirgiz

[Abstract] There are difficulties in applying altitude chamber studies of immunological reactions to actual conditions. The T and V immunity systems and specific and nonspecific immunity factors of 80 individuals (47 living at altitudes of 760-980 meters) and 30 at altitudes of 2,800 m and higher) show that immunologlobulin-M, staphylococcus, and antistreptolysin are lower in the mountain dwellers (data presented in a table). The low altitude group was moved to higher elevations for periods ranging from 5 to 40 days and then returned to low altitudes for a 5-day deadaptation period. In the initial phases there was a reduction in the basic indicators, followed by a rise almost to previous levels. Immunoglobulin A, M, and G, levels dropped, then rose. Concurrently, the individuals retained an adequate immunological capability. There are phase shifts in immunological reactivity. No references.

USSR UDC 576.858.25.095.38:576.895.421].083.1

DETECTION OF BHANJA VIRUS IN EXPERIMENTALLY INFECTED IXODID TICKS BY PASSIVE HEMAGGLUTINATION

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 4, 1978 pp 83-86

KLISENKO, G. A., GAYDAMOVICH, S. YA., GROKHOVSKAYA, I. M. and SHCHERBAKOVA, S. V., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR (AMS USSR), and the Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, AMS USSR

[Abstract] Tests were conducted with a previously developed passive hemagglutination test to examine its reliability in detecting Bhanja virus strain G-690 in the ixodid tick Hyalomma asiaticum. Time course study of ticks fed on infected rabbits, using both passive hemagglutination and a test involving intracerebral inoculation of 5-6 g mice, showed excellent correlation between the two tests in following the course of infection in ticks. Both the antigen (detected by passive hemagglutination) and the virus (mouse

test) could be detected within 2 weeks of feeding and followed for 5 months; the tests were equally successful with fasted and fed ticks. The virus was not detected in the eggs or progeny of infected female ticks. References 14: 4 Western, 10 Russian.

USSR UDC 576.852.1.095.383:547.915

AQUATIC PETROLEUM-OXIDIZING ARTHROBACTERIA

Moscow MIKROBIOLOGIYA in Russian No 3, 1978 pp 501-504 manuscript received 19 Jul 77

KORONELLI, T. V., GOLIMBET, V. YE., USHAKOVA, N. A. and ROZYNOV, B. V., Biology Faculty, Moscow State University imeni M. V. Lomonosov

[Abstract] Eight species of bacteria taken from the Yenisey River were compared to control cultures of A. variabilis, A. simplex, A. tumescens and other species of bacteria, and to the microorganism Mycobacterium ceroformans, as to their ability to break down petroleum products. Lipid specimens were hydrolyzed using an aqueous potassium alkali for 24 hours, then the acids were combined with diazomethane before chromatography. Results indicated that all 8 species actively broke down diesel fuel and, to a lesser degree, crude oil. Culture configurations of the bacteria are described. The arthrobacteria showed great similarity to the Mycobacter. ceroformans described earlier by the authors. A particular feature of all test cultures was the formation of waxes totalling 70% of all lipids. No mycolic acids were observed; palmitic acids predominated in the acid composition. Along with the absence of arabinose, these factors indicate that arthrobacteria differ from mycobacteria more than previously thought. Figure 1; references 11: 9 Russian, 2 English.

USSR UDC 615.332(Tetracyclinum):661.185

POTENTIATION OF TETRACYCLINE ACTIVITY BY SURFACE ACTIVE AGENTS

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 605-609 manuscript received 17 Oct 77

ANAN'YEVA, YE. P., AFINOGENOV, G. YE. and YELINOV, N. P., Leningrad Chemico-Pharmaceutical Institute, and the Scientific Research Institute of Traumatology and Orthopedics imeni R. R. Vreden, Leningrad

[Abstract] Studies were conducted with 26 strain of tetracycline-resistant gram negative bacteria (E. coli, Proteus, Pseudomonas aeruginosa), as well as with Staphylococcus aureus, to determine the effects of anionic and cationic surface active agents on the susceptibility of these bacteria to tetracycline (TC). The results showed that treatment of the gram negative cells with the cationic agent catamine AB (alkyldimethylbenzylammonium chloride) rendered them susceptible to TC, while treatment with the anionic agent sulfonol NP-3 (alkylbenzenesulfonate) did not. Treatment of the gram

positive organism Staphylococcus aureus with either the cationic or anionic agent was effective in increasing its susceptibility to TC. Studies with the effects of surface active agents on the uptake of ^{14}C-labeled oxytetracycline indicated that these agents favored cellular uptake of TC due to alterations in plasma membrane permeability. Figures 3; references 14: 4 Western, 10 Russian.

USSR UDC 615.332(Oleandomycinum).012.8

COMPONENTS IN THE FERMENTATION BROTH AFFECTING THE DISTRIBUTION OF OLEANDOMYCIN DURING EXTRACTION

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 626-629 manuscript received 10 Feb 78

SLAVIN, A. A., ETINGOV, YE. D., OSTROVSKIY, M. V., VARLASHINA, V. M., KOROTKAYA, L. V. and PYSHNYY, S. P., All-Union Scientific Research Technological Institute of Antibiotics and Medicinal Enzymes, Leningrad, and the Leningrad Chemico-Pharmaceutical Institute

[Abstract] Various extraction studies were conducted with fermentation broths which led to the conclusion that the broth contains component(s) that binds oleandomycin and hinders its extraction with butyl acetate. The unidentified component, designated as Z, shifts the equilibrium in favor of the aqueous phase and renders extraction with an organic solvent rather inefficient. References: 4 Russian.

USSR UDC 615.332(Albofunginum).012.6:576.852.18.083.3

OPTIMIZATION OF A NUTRIENT MEDIUM FOR THE BIOSYNTHESIS OF ALBOFUNGIN ON THE BASIS OF REGRESSION COEFFICIENTS

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 590-592 manuscript received 7 Feb 78

SABIROV, S., KUZNETSOV, V. D., FILIPPOVA, S. N. and FISHMAN, V. M., Institute of Microbiology, Academy of Sciences USSR, and the All-Union Scientific Research Institute of Antibiotics, Moscow

[Abstract] Regression coefficients were applied to 6 components of corn medium No 2 (corn extract, $(NH_4)_2SO_4$, NaCl, $CaCO_3$, potato starch, glucose) in order to determine their optimal concentrations for achieving maximum synthesis of albofungin by a green variant of Actinomyces tumemacerans. The

resultant analysis led to the designation of the following as the optimum medium for the purpose in question yielding an 8-fold increase in albofungin biosynthesis: 0.86% corn extract, 0.3% ammonium sulfate, 0.4% sodium chloride, 0.35% calcium carbonate, 2.6% potato starch, and 1.8% glucose. References 11: 2 Western, 9 Russian.

USSR UDC 615.332.012.6:547-32

EFFECTS OF ORGANIC ACIDS ON THE BIOSYNTHESIS OF MACROTETRALIDE ANTIBIOTICS BY ACTINOMYCES CHRYSOMALLUS VAR. CEROTENOIDES

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 586-590 manuscript received 6 Oct 77

NEFELOVA, M. V., SVERDLOVA, A. N. and SILAYEV, A. B., Laboratory of Antibiotics, Biology Faculty, Moscow State University imeni M. V. Lomonosov

[Abstract] Studies were conducted on the effects of various organic acids on the growth and production of macrotetralide antibiotics by Actinomyces chrysomallus var. carotenoides mycelium on the basis of ^{14}C-acetate incorporation into the antibiotic. The results showed that highest antibiotic concentrations were obtained with 48 h mycelia although the mycelial biomass was in a decline after 24 h. Antibiotic biosynthesis was observed to be stimulated by the addition of the following organic acids to the culture medium: acetic acid, proprionic acid, succinic acid (macrotetralide precursors), oxalic acid, malic acid, tartaric acid, citric acid, pyruvic acid, alpha-ketoglutarate, and fumarate. Generally, addition of organic acids promoted active synthesis of the antibiotics for up to 84 h. Figures 2; references 3: 1 Russian, 2 Western.

USSR

UDC 575.591

GENETIC-HYGIENIC REGULATIONS FOR THE USE OF PESTICIDES WITH CONSIDERATION OF THEIR POTENTIAL MUTAGENIC HAZARD

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 12, No 4, Jul/Aug 78 pp 353-358
manuscript received 4 Jan 78

KURINNYY, A. I., All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics, Ministry of Health USSR, Kiev

[Abstract] Recommendations are needed for regulating the production and the use of pesticides so as to avoid mutagenic hazards. The relatively-low mutagenicity and the narrow range of effective doses make a toxicological estimate of maximum allowable concentrations in the ambient atmosphere and of the allowable residual amounts in food products, based on threshold levels, impossible. There is enough information available, however, about the mutagenic properties of these substances as well as about the kind and the degree of their genetic activity for establishing some regulations as to their use. The degree of mutagenic hazard is, accordingly, defined in terms of both the magnitude of the induced effect and the magnitude of the dose inducing it. A scale of hazard levels is devised on this basis and correlated with indicators according to cytogenetic analysis of affected tissue. For illustration, this scale is applied to a few potentially hazardous pesticide preparations (TMTD, TSIRAM, VALEKSON, METAFOS, CHLOROFOS, and 2,4-D). References 15: 12 Russian, 3 Western.

USSR

UDC 612.354.014.46:632.95

EFFECTS OF LONG TERM PESTICIDE INTAKE ON HEPATIC DETOXIFICATION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7, Jul 78 p 57

KUZ'MINSKAYA, U. A., YAKUSHENKO, V. YE. and BERSAN, L. V., Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics, Kiev

[Abstract] Various pesticides were administered intragastrically to rats for 1, 3, or 6 months in 1/100 and 1/1000 LD_{50} doses to determine their effects on hepatic dimethylase. The results showed that organochlorine compounds (DDT, gamma-hexachlorocyclohexane, polychlorocamphene, mil'beks [sic]), and the organophosphorus pesticide fozalon [sic], promoted a 1.6-fold increase in dimethylase activity, whereas administration of tetramethylthiuram disulfide depressed dimethylase activity by 1/3rd after 6 months of administration.

USSR

UDC 613.632.4:547.391.1]-074

RAPID METHOD FOR THE DETERMINATION OF METHYLACRYLATE IN AIR

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIY in Russian No 7, Jul 78 pp 56-57

VOLOSKOVETS, A. L., deceased, MYSYK, D. D. and KHUDOSOVTSEVA, G. P., Polytechnical Institute, Donetsk

[Abstract] A rapid method for the determination of methylacrylate was developed by preparing a column containing silicagel with adsorbed potassium permanganate and sodium hydrophosphate. As methylacrylate-containing air is passed through the column the length of the tube showing oxidation undergoes a color change and is correlated with methylacrylate content. Acrylonitrile (up to 5 mg/m^3), methanol (up to 100 mg/m^3), HCl (up to 100 mg/m^3), or ammonia (to 400 mg/m^3) do not interfere with the test; the indicator column remains stable for a year.

USSR

UDC 615.917:547.213-39

PATHOGENESIS AND THERAPY OF ACUTE POISONING DUE TO TERTIARY AMYL HYDROPEROXIDE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7, Jul 78 p 51

BUKHALOVSKIY, A. A. and SHUGAYEV, B. B., Yaroslavl

[Abstract] Experimental studies were conducted on albino rats to determine the chemotherapeutic efficacy of various SH-containing compounds either in prevention or treatment of acute intoxication with LD_{50} or LD_{99} doses of tertiary amyl hydroperoxide. None of the tested agents was capable alone of saving rats given the LD_{99} dose; however, the following regimen--instituted within 15 min of intoxication--was fully effective in preventing death: 2% sodium bicarbonate subcutaneously, intraperitoneal 0.3 mg/kg khromosmon [sic] + 50 mg/kg cystamine dihydrochloride, and subcutaneous pentylenetetrazol as indicated.

USSR

UDC 615.916:546.191

CASE OF ACUTE POISONING WITH ARSINE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7, Jul 78 pp 45-47 manuscript received 3 Aug 77

MOLODINA, N. N. and GOL'DFARB, YU. S., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, and the Institute of Medical Emergencies imeni N. V. Sklifosovskiy, Moscow

[Abstract] Clinical symptoms and treatment are described for a 34-year old worker exposed to 7 kg of hydrogen arsenide in the air for 20-30 sec as a result of an industrial accident. Symptomatology began within 2 h with hematuria and in 4 h the patient presented at a clinic with epigastric pain, nausea, weakness, sinus tachycardia, icteric sclera, elevated lactate dehydrogenase and other symptoms of severe intoxication. Treatment consisted of diuretics, electrolytes, sodium bicarbonate, vitamins and other forms of intravenous supportive therapy. Improvements in the patient's condition were correlated with elimination of arsenic from the body. Examination of the patient 4 months after the incident showed above-normal levels of arsenic only in the hairs; the patient showed negligible diminution in renal excretory function and in hepatic detoxification. References 8: 2 Western, 6 Russian.

USSR

UDC 613.632:677.044.321+615.9:677.044.321

CHEMICAL CLASSIFICATION IN THE PREDICTION OF TOXICITY OF ORGANIC DYES USED IN THE TEXTILE INDUSTRY

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7, Jul 78 pp 16-23

VORONIN, A. P., Medical Institute, Ivanovo

[Abstract] Literature and personal data were used to construct a classification of organic dyes used in the textile industry for purposes of predicting their toxicity. The 11 classes entering into the scheme of classification are as follows: nitro dyes, nitroazo dyes, azo dyes, arylmethane dyes, quinoneimine dyes, sulfur dyes, indigo and thioindigo dyes, anthraquinone dyes, polycyclic cubic dyes, phthalocyanic dyes, and polymethine and isomethine dyes. References 25: 6 Western, 19 Russian.

USSR UDC 613.6:662.753.21

WORKING CONDITIONS AND HEALTH OF WORKERS ENGAGED IN THE PRODUCTION OF BENZENE AND ITS HOMOLOGS FROM CRUDE OIL

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7, Jul 78 pp 3-7

BOYKO, V. I. and MAKAR'YEVA, L. M., Institute of Hygiene and Occupational Diseases, Ufa

[Abstract] Analyses conducted at 8 of the largest Soviet refineries showed that during 1967-1969 and 1972-1974 production of benzene was accompanied by its presence in 80% of the air samples obtained at the production sites, and that in 46-64% of the samples benzene concentrations exceeded the maximum permissible levels. Toluene was detected in 56-68% of the air samples, and exceeded the maximum permissible concentration in 23% of the samples. The analogous figures for xylene were 58.3-87.7% and 20.4-53%, respectively. Furthermore, the noise levels were generally in excess of the permissible levels by 10-26 dB. Examination of 500 male and 84 female workers revealed the presence of neural cardiovascular and hematologic changes in some; the conclusion was apparent that improvements in the techniques of benzene, toluene, and xylene manufacture would do much to improve the hygienic aspects of the working conditions. References: 5 Russian.

USSR UDC 613.6

MORBIDITY DYNAMICS AND TEMPORARY INCAPACITY AMONG OIL REFINERY AND PETROCHEMICAL WORKERS

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 4, 1978 pp 80-83 manuscript received 15 Dec 77

BELOMYTTSEVA, L. A., candidate of medical sciences (CMS), BOYKO, V. I. CMS, BULATOVA, F. D., CMS, KARAMOVA, L. M., CMS, and KROTKOVA, S. V., Junior Scientist, Ufa Scientific Research Institute of Hygiene and Occupational Diseases

[Abstract] Evaluation of the dynamics of morbidity and loss of work days at the Soviet refineries and petrochemical plants has shown a leveling off over the last 7-8 years. There has been a general decrease in the incidence of gastrointestinal diseases, although industrial noise has been incriminated as a factor in the increased incidence of hypertension. A number of measures have been recommended for raising the level of industrial hygiene as it is practiced in the USSR, with primary emphasis placed on preventive measures. Such efforts at the Kuybyshev refinery have reduced the number of cases seen at the dispensary by 24-26% during the last few years with

an equivalent decrease in the number of lost workdays. The corresponding figures applicable to statistics on gastrointestinal diseases, including gastric and duodenal ulcers, were 42% and 49%.

HUNGARY

COMBINED EFFECT OF PHOSPHORIC ACID ESTER PESTICIDES AND OF BENCYCLAN ON THE ACETYLCHOLINESTERASE ACTIVITY OF HUMAN RED BLOOD CELLS, IN VITRO

Budapest KISERLETES ORVOSTUDOMANY in Hungarian Vol 30, No 3, Jul 78
pp 325-334 manuscript received 15 Oct 77

MANYAI, Sandor, KOCH, Erzsebet, B. SZENZENSTEIN, Maria, National Institute of Labor and Factory Hygiene, Budapest

[Abstract] The combined, in vitro reaction of the vasodilator bencyclan (Halidor^{R}) and of 0,0-dimethyl-2,2-dichlorovinyl phosphate (DDVP) and 0,0-diethyl-0-p-nitrophenyl phosphate (paraocon) with human red cell-membrane acetylcholinesterase (AChE) was studied in order to shed light on the contradictory reports found in the literature. Bencyclan is a model for a reversible cholinesterase-inhibitor drug while DDVP and paraoxon are irreversible inhibitors of the enzyme. It was found that the combined effect of pesticide and bencyclan may result in either an increase or a lessening of AChE inhibition depending on the pH of the medium and the concentration of the inhibitors. When either of the pesticides is used with bencyclan, their enzyme inhibition is dependent on the bencyclan concentration. In the presence of bencyclan concentrations (2×10^{-4} - 1.2×10^{-3} M) which inhibit rbc-membrane AChE activity, the rate and degree of inhibition was less than the sum of the effect of the individual inhibitors. When bencyclan was present in smaller concentrations (10^{-6} - 10^{-5} M), which alone had no effect on AChE inhibition, it had a synergistic effect on DDVP. A similar synergistic effect on AChE inhibition was not found with bencyclan and paraoxon. The pH dependence of the combined DDVP a and bencyclan effect is explained in terms of a competition by the bencyclan cation for the enzyme, which results in an antagonistic effect, while the synergistic effect is thought to be the result of a change in the AChE conformation caused by bencyclan. Figures 5; references 32: 3 East German, 2 Hungarian, 27 Western.

USSR

UDC 617-001.17-022.7:576.851.132

PYOCYANIC INFECTION IN PATIENTS WITH THERMAL DAMAGE

Moscow KLINICHESKAYA MEDITSINA in Russian Vol 56, No 7, Jul 78 pp 117-122 manuscript received 11 Apr 77

GRISHINA, I. A., PANOVA, YU. M., AKATOVA, N. S., SMIRNOVA, N. YE. and MINKOVA, G. L., Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR; State Scientific Research Institute of Standardization and Control of Medical Biological Preparations imeni L. A. Tarasevich, Moscow

[Abstract] The threat of pyocyanic infection of burns even in medical treatment centers is emphasized, and the need for serotyping the causative microorganism species to combat it effectively is pointed out. Burns considerably lower the barrier and protective functions of the body. Serogroup II strains of the organism were found to predominate in wounds and other materials from patients with severe and extensive burn injuries, and the source of the strains seemed to be the treatment center, although other strains were contaminating agents. The burn site appears to be the source of the generalized pyocyanic infection of burn patients. References 20: 2 Russian, 18 Western.

USSR

UDC 576.8.095.3:547.533

2,4,6-TRINITROTOLUENE AS A SOURCE OF NUTRITION FOR BACTERIA

Moscow MIKROBIOLOGIYA in Russian No 3, 1978 pp 393-395 manuscript received 3 Oct 77

AMERKHANOVA, N. N. and NAUMOVA, R. P., Kazan' State University

[Abstract] Research was conducted to determine the utilization of 2,4,6-trinitrotoluene as a source of hydrogen and carbon for bacteria of the species Escherichia coli and Pseudomonas denitrificans. The bacteria were cultivated on a synthetic medium and 0.02% TNT (recrystalized from ethanol) was applied. Results indicated that the TNT was more acceptable as a nitrogen source for E. coli than for Ps. denitrificans, and was slightly utilized by Ps. denitrificans for carbon and not at all by E. coli. The TNT served as a co-metabolism agent in the presence of other sources of nutrition, indicating some value for bacterial decomposition of TNT in sewage water. Figures 2; references 7: 3 Russian, 4 Western.

HUNGARY

PURIFICATION AND PRODUCTION OF ENTEROTOXIN B PRODUCED BY STAPHYLOCOCCUS AUREUS

Budapest KISERLETES ORVOSTUDOMANY in Hungarian Vol 30, No 3, Jun 78
pp 240-245 manuscript received 10 Aug 77

MAJOR, Peter, National Institute of Food and Nutrition

[Abstract] In 1976, in Hungary, Staph. aureus was the cause of food poisoning in 118 cases, Salmonella in 49 cases. Staph. aureus strain 262 was used for the purification of Staph. aureus enterotoxin B. Liquid medium, consisting of casein digested with 2% pancreas (NZ-amine NAK Sheffield) was used for the culture to which thiamine and nicotinic acid were added. The raw (impure) enterotoxin was prepared by adding the Staph. aureus 262 strain to blood agar plates. After 24 hours of incubation, the well-hemolysing colonies were transferred to a 2% NZ-amine NAK culture medium. The inocula were incubated with air and mixing at 37°C for 48 hours. The bacterial cells were then removed by centrifugation and the supernatant liquid was filtered through a G-5 filter. In addition to the enterotoxin, the filtrate consists of other extracellular proteins as well and is designated as raw. This raw material was purified in three steps: 1) Diluted with 2 parts double distilled water, pH adjusted to 6.4 with 6 N HCl and the enterotoxin extracted using Amberlite CG-50 (Serva) ion exchange resin. The eluent was collected in 3 ml fractions and their extinction was measured on a spectrophotometer at 277 nm. The high extinction fractions were combined and dialyzed to reduce their salt content. 2) The combined fraction was sent through another Amberlite CG-50 column and collection, extinction measurement and dialysis were repeated. 3) Final purification was done using CM-cellulose (Whatman) ion exchange resin. To control the purification process, polyvalent immune serum was prepared by the Hallender method. The purity of the enterotoxin B obtained was tested and confirmed by immunoelectrophoresis. Its homogeneity was examined using polyacrylamide-gel disc electrophoresis. It was found that the enterotoxin produces a single fraction in acidic system, and two very closely situated fractions of nearly identical molecular weight in a basic system. Figures 3; references 24: 3 Hungarian, 21 Western.

USSR

CONTENT OF rDNA IN THE CLONES OF ONION ALLIUM FISTULOSUM WITH VARIOUS MORPHOLOGY OF SATELLITE NUCLEOLAR CHROMOSOMES

Moscow GENETIKA in Russian Vol 14, No 3, 1978 pp 406-415 manuscript received 10 Feb 77

YAMPOL', G. P., POSPELOV, V. A., Institute of Cytology and Genetics, Siberian Division, Academy of Sciences USSR, Novosibirsk

[Abstract] Thirteen clones of A. fistulosum were separated into five groups, depending on the presence and type of chromosomal satellites, DNA and RNA were extracted, the tracer ^3N uridine of the latter was subjected to electrophoretic analysis. Hybridization indicated that the amount of rDNA in the various types of clones varies from 0.98% to 0.314%. The low figure is for classic non satellite. The rDNA content can vary by a factor of 3 in clones with both nucleolar homologous chromosomes having large satellites (the "classic" c_1 type). Clones with diffuse (D_2D_2) pairs (rDNA content) (0.096-0.107%), had no verifiable differences between them, in contrast to others. Their hybridization was minimal. Nucleolar chromosomes of the "classic" c_1 are in the secondary constriction and adjacent areas. Deletions may result in different morphological types. ("Deep gratitude" is expressed by the authors to A. A. Sokolenko for advice in the work and discussion of results.) Figures 4; references 40: 7 Russian, 33 Western.

USSR

UDC 575.1:576.85

PLASMID F'ColVColBtrpcys in ERWINIA AROIDEAE

Moscow GENETIKA in Russian Vol 14, No 3, 1978 pp 487-501 manuscript received 15 Apr 77

GOLDFARB, D. B., AVDIENKO, I. D., SCHUKIN, N. N., Institute of General Genetics, USSR Academy of Sciences, Moscow

[Abstract] The transfer and behavior of plasmids in Erwinia have received little study. The F'Coltrp plasmid has been described by Fredrick. The strains used are listed. The fractions of f'colt decline after about 40 hours. Experimental results agree with earlier studies (E. aroidaea can accept plasmids from Escherichia). There are two features of this plasmid's behavior in E. aroidaea: (1) instability, (2) depression. The former is discussed more thoroughly. It results from the properties of the host, the rate of elimination depending on the growth rate of host. The plasmid causes changes in the cell surface. There may be a critical plasmid in this strain which is not compatible to F'Foltrp. The probability of this is low.

There is a higher rate of colicin synthesis than in E. coli. There was a lower level of gene expression for the plasmids coding peiecillinase and tetracyclinease. The increase in colicin is due to an increase in the number of cells with depressed colicin genes. In addition to a description of the experiment, the Western literature is extensively surveyed. Figures 6, references: 27 Western.

USSR UDC 616-001.36-02:615.917:547.292)-08:616.12

CARDIAC DAMAGE IN EXOTOXIC SHOCK PATIENTS

Moscow KLINICHESKAYA MEDITSINA in Russian Vol 56, No 7, Jul 78 pp 28-33
manuscript received 5 Nov 77

SAVINA, A. S., GALANKINA, I. YE., ZAKHAROVA, A. V., IL'YASHENKO, K. K. and MIRKOVSKAYA, ZH. YE., Republic Center for Treatment of Poisoning; Section of Pathological Anatomy of the Scientific Research Institute of First Aid [Skoraya Pomoshch] imeni N. V. Sklifosovskiy, Moscow

[Abstract] A clinical morphological study of the heart was carried out on patients who died from exotoxic shock; according to Luzhnikov, et al. (1977), in acetic acid poisoning, this form is a classic example of hypovolemic shock. Sixty-three patients (45 women, 18 men) were studied; diagnosis was severe exotoxic shock: the patients had taken, internally, 80-150 ml of a vinegar essence. Twenty-six died in the first 46 hrs displaying decompensated shock. Studies included EKG,central hemodynamics, phase analysis of systole of left ventricle, histological, electron-microscopic and electronhistochemical examinations of the myocardium. The cardiac activity during the development of hypovolemia was directed, in the compensatory and decompensatory phases, to the creation of an effective hyperfunction. Nonspecific dystrophic changes in the muscle cells appeared due to damage of the microcirculation vessels. Dystrophic changes in the muscle cells appeared due to damage of the microcirculation vessels. Dystrophic changes in the contracting myocardium are secondary in character and are not involved in the development of disruptions in the central hemodynamics of the shock patients. Figures 4; references 8: 5 Russian, 3 Western.

USSR

INSECT ATTRACTANTS

Moscow TEKHNIKA I NAUKA in Russian No 6, 1978 pp 8-9

YEVSTIFEYEV, A., Director of Laboratories of the Scientific Research Institute for Application of Chemicals in Agriculture of the Siberian Department of the All-Union Academy of Agricultural Sciences imeni Lenin, Novosibirsk

[Abstract] The efforts of the laboratory in developing effective synthetic attractants using domestic and readily available materials are described. The laboratory has successfully produced a sexual attractant for the house fly for use in glue traps, and has also produced and tested a chlorinated polyvinyl chloride glue that is more effective than the deficit rosin-base

glue. Several practical applications are described, including attractants for rodents, and difficulties in supply are pointed out as a limit on further advances. Figures 3.

USSR UDC 615.332(LIA-0191).011.4

PHYSICOCHEMICAL PROPERTIES OF ANTIBIOTICS LIA-0191 A AND B

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 579-581 manuscript received 6 Feb 78

MITROFANOVA, V. G., OMEL'CHENKO, V. N., PETROVA, L. YA. and SHENIN, YU. D. All-Union Scientific Research Technological Institute of Antibiotics and Medicinal Enzymes, Leningrad

[Abstract] Procedures are described for methanol extraction of Actinomyces mycelia to yield an antifungal preparation consisting of 2 antibiotic entities, LIA-0191 A and B. On the basis of physicochemical analysis and comparison with purine and pyrimidine pyrroles component A was identified as Septacidin, while component B represented a novel non-polyene antibiotic. Both inhibited fungi and yeasts and were inactive with respect to bacteria; the LD_{50} on intraperitoneal administration of A was 17 mg/kg (animal species not given). Figures 2; references 2: 1 Western, 1 Russian.

USSR UDC 615.332(Memomycinum).011.5

CHEMICAL CHARACTERISTICS OF MEMOMYCIN (LIA-0775)

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 582-585 manuscript received 23 Jan 78

SHENIN, YU. D., OMEL'CHENKO, V. N. and ONOPRIYENKO, V. V., All-Union Scientific Research Technological Institute of Antibiotics and Medicinal Enzymes, Leningrad

[Abstract] Analytical data are presented for a novel antibiotic, memomycin (LIA-0775), isolated from Actinomyces memokrassinus. Memomycin possesses antifungal and antiyeast properties, and is also inhibitory to gram positive bacteria. Comparative data indicate that it belongs to the hydrostatin-nifimycin group of antibiotics; it is a neutral compound which has no sugars and is ninhydrin negative. Oxidative hydrolysis of memomycin with an alkaline permanganate solution suggests the presence of a minimum of 8 methylene groups in its carbon skeleton. References 16: 4 Russian, 12 Western.

USSR UDC 617-089.165.5;[615.281;547.333.4+615.33

STERILIZATION OF SURGICAL SILK SUTURES WITH DECAMETHOXINE, ANTIBIOTICS OR THEIR COMBINATION

Moscow ANTIBIOTIKI in Russian No 7, 1978 pp 629-633 manuscript received 29 Dec 77

PALIY, H. K., YUKHIMETS, A. D. and ONOFREYCHUK, I. F., Vinnitsa Medical Institute imeni N. I. Pirogov, and the Chernovtsi Medical Institute

[Abstract] Decamethoxine and several antibiotics (benzylpenicillin, streptomycin, monomycin) were used alone or in combination in the sterilization of No 6 silk sutures contaminated with various pathogenic gram positive and gram negative bacteria. The results showed that absolute sterilization was obtained only under conditions in which the sutures were first treated with 0.1% decamethoxine for 15 min, followed by 105 min exposure to antibiotic solution. Further studies showed that treatment of the No 6 sutures with 0.1% decamethoxine for 24 hr did not affect its tensile strength appreciably. References: 18 Russian.

USSR

UDC 616-001.18-036.1

CLINICAL ASPECTS AND CLASSIFICATION OF GENERAL COOLING

Moscow KLINICHESKAYA MEDITSINA in Russian Vol 56, No 7, Jul 78 pp 122-126 manuscript received 28 Nov 77

KLINTSEVICH, G. N., Military Medical Academy imeni S. M. Kirov

[Abstract] A. V. Orlov (1946) and N. I. Gerasimenko (1950) are cited as having made important contributions to the clinical knowledge of general cooling. This article reports study of the problem in 264 people, (mostly young, 20-23, who experienced mild to severe, life-threatening cooling) and in 58 people wherein it was further possible to follow the restorative period. Observations are described in detail, about shivering, painful sensation on exposed face and hands, goose bumps, frostbite, shrivelling, apathy, difficulty in moving, and the like. Rectal temperature, pulse, arterial pressure and respiration in these subjects are tabulated. No initial loss of temperature occurs until after 2 hrs of cooling. Pulse and respiration are not greatly affected but the arterial pressure rises significantly. Data corresponded to that of Orlov and Gerasimenko. The classification suggested distinguishes a state of cooling (with no substantial sequelae), a period of hypothermia and a period after cooling which may involve varying degrees of severity. The two latter states are regarded as "general cooling", a sickness; they are further distinguished on basis of degree of lowering of body temperature, level of disturbance of consciousness, disturbance of the cardiovascular and respiratory systems and on the basis of complications and attendant disorders, e.g., freezing. The latter states differ clinically from mere hypothermia. No references.

USSR

MODELLING OF THE INFLUENCE OF RHYTHM ON THE STRENGTH OF CONTRACTION OF CARDIAL MUSCLE

Moscow BIOFIZIKA in Russian Vol 23, No 4, Jul/Aug 78 pp 674-681 manuscript received 11 Jan 77

MARKHASIN, V. S. and MIL'SHTEYN, G. N., Cardiosurgical Center, Sverdlovsk; Ural State University imeni A. M. Gorkiy, Sverdlovsk

[Abstract] Strength of heart muscle contraction is associated with the heart beat rhythm; rhythm-inotropic manifestations are variegated and differ in various sectors of the heart in the same animal and in the same sectors of different species. The mechanism of these manifestations is not completely understood but is generally believed to involve changes in concentration of

free calcium in the sarcoplasm of the myocardial cells in each contraction-relaxation cycle; calcium ions also enter the sarcoplasm from extracellular space and intracellular structures. Calcium content depends on the heart palpitation rhythm. The present report proposes a mathematical model to clarify the effect of the rhythm on the contractions. Design of the model shows it to be a three cycle concept: i) entry, into the sarcoplasm, of calcium from the two sources, extracellular and an intracellular pool; ii) these two calciums are combined with contractile protein in pool A and activate contraction; iii) the calcium of pool A is absorbed by pool B (this cycle corresponds to relaxation). Work and contents of the various cycles and pools are defined mathematically. The rhythm-inotropic manifestations are associated with calcium circulation. Figures 4; references 19: 3 Russian, 16 Western (one co-authored by Russian author Markhasin).

USSR

MATHEMATICAL MODEL OF ADAPTATION OF A NEURON TAKING INTO ACCOUNT THE EFFECT OF CALCIUM ON MEMBRANE PERMEABILITY TO POTASSIUM IONS

Moscow BIOFIZIKA in Russian Vol 23, No 4, Jul/Aug 78 pp 668-673 manuscript received 16 Mar 77

FROLOV, A. A. and PETUKHOVA, V. M., Institute of Higher Nervous Activity and Neurophysiology, Academy of Sciences USSR, Moscow

[Abstract] This is a study of adaptation by neurons io a constant action, an adaptation which optimizes information processing. Use is made of a mathematical model of an adaptive neuron (used also by Kernell and Sjoholm, 1973) which employs modified equations of Frankenhauser and Huxley; the manifestation of adaptation does not involve the presence of slow potassium channels but, rather, the effect of an increase in potassium permeability due to the rise in intracellular concentration of calcium ions during prolonged spike activity of the neuron. The calcium ions enter the cell during development of the action potential. Meech's effect (1975) was used to determine the magnitude of the intracellular effect of the calcium and the rate of output of calcium from the cell. The model reproduces adaptation in the sequence: intracellular accumulation of calcium, increase in potassium permeability, rise in the succeeding hyperpolarization, increase in intrapulse intervals. Figures 5; references 18: 7 Russian, 11 Western.

USSR

RAPID ACTION AND THE MOVEMENT OF EYES DURING A LEAP

Moscow BIOFIZIKA in Russian Vol 23, No 4, Jul/Aug 78 pp 737-738 manuscript received 5 Jan 78

ARMISHEV, S. V., Moscow Physical Technical Institute

[Abstract] The leap referred to here is the movement of the eyes when fixation points are shifted. Its basic distinguishing feature is a large angular velocity and short duration. Yarbus (1965) notes that for a 5° angle leap, the angular velocity reaches 200 grad/s and time of movement 0.03 to 0.04 sec. A report is presented here of a mathematical approach to define the nature of the eye movement on the principle of rapid action.

USSR

UDC 612.883

COMPARATIVE SENSITIVITY OF HUMAN SKIN

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian Vol 31, No 5, 1978 pp 469-475 manuscript received 5 Dec 1977

MATOYAN, D. S. Psychological Problem Laboratory, Armenian Pedagogical Institute imeni Kh. Abovyan

[Abstract] Tests using an adequatometer are described, with control of pressure, duration, and area of an air stream. Air pressure at the outlet was measured by a micromanometer, and tests were conducted on the lower lip, the cornea, the cheek, palm, back of the wrist, inner surface of the forearm and shoulder, the back above the shoulder blade, the middle of the abdomen, the front of the thigh and shin, and the top of the foot. Four subjects of 18-20 years of age were involved. Results indicated that not pressure but air stream force was the important parameter, and that area was a constant. The most sensitive areas tested were the lower lip, cornea and cheek, the least sensitive the thigh, abdomen and shin, and the other areas showed intermediate levels of sensitivity. The tests were undoubtedly influenced by other factors not measured. Figures 4; references 9: 4 Russian, 5 Western.

USSR

UDC 612.826.4:612.886.1

EFFECT OF RADIAL ACCELERATION ON AN ELECTROCORTICOGRAM AND ON HYPOTHALAMO-CORTICAL RESPONSES IN RABBITS

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian Vol 3, No 5, 1978 pp 445-453 manuscript received 3 Mar 78

GRIGORYAN, S. S., BAKLAVADZHYAN, O. G. and SARKISYAN, N. V., Department of Human and Animal Physiology, Yerevan State University

[Abstract] Research was conducted on a long-term experimental basis with regular electrocorticograms and measurements of hypothalamo-cortical evoked potentials through electrodes implanted in sensory motor, temporal cortex, and postero-lateral areas of the hypothalamus, following the coordinates of the large hemisphere. Results indicated that electrical stimulation of the postero-lateral area brought evoked potentials of a positive-negative configuration in the range of 220-240 microvolts positive, and 250-280 microvolts negative. Wider variation (between 80 and 530-500+ microvolts) apparently were related to accuracy of electrode placement. After radial acceleration for 30 seconds, it was noted that theta wave activity increased and delta wave activity decreased, each by 45-50%. Data obtained on the latent period in hypothalamo-cortical response suggest a possible monosynaptic connection of the back hypothalamus with the sensorimotor areas of the cortex. There is an apparent activization of the cortex through stimulation of the non-specific brain activization system. Changes in the amplitude of hypothalamocortical evoked potentials may also be the results of hemodynamic changes in the structure of the cortex and hypothalamus. Figures 6; references 20: 16 Russian, 4 English.

USSR

LOCAL LESIONS IN BRAIN STEM FORMATIONS AND THE MECHANISMS RESPONSIBLE FOR THE SYSTEMIC REGULATION OF CEREBROVASCULAR AND PERIPHERAL CIRCULATION AND CARDIAC ACTIVITY

Moscow FIZIOLOGIYA CHELOVEKA in Russian No 3, 1978 pp 495-503

MAYORCHIK, V. YE. ANZIMIROV, V. L., GASANOV, YA. K., LYKOSHINA, L. YE. and SPIRIN, B. G., Institute of Neurosurgery imeni N. N. Burdenko, Academy of Medical Sciences USSR, Moscow

[Abstract] Multiple parameter electrophysiologic studies were conducted on 60 healthy subjects and 375 patients with lesions affecting various formations in the brain stem to determine the effect of the lesions on the regulation of the cerebrovascular circulation--peripheral circulation--

heart activity axis. Using stress tests consisting of breath holding, hyperventilation, CO_2 inhalation, caloric vestibular tests, visual and acoustic stimuli led to the observation that lesions at the hypothalamo-diencephalic level resulted in a breakdown in fine regulatory mechanisms of the cardiovascular system and the responses represented more or less nonspecific adaptation of the entire organism to the stress stimuli, e.g., hyperventilation elicited dilatation of cerebral blood vessels and constriction of peripheral vessels in normal subjects, and unidirectional changes in patients with lesions. Lesions at the rhomboencephalic levels involved sequelae in the cardiovascular system directly attributable to the formation involved, rather than generalized alterations in the cardiovascular system. Figures 4; references 34: 5 Western, 29 Russian.

USSR UDC 612.822.3-087.87

COMPUTERIZED EEG IN THE EVALUATION OF CORTICAL FUNCTION IN THE RABBIT

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 8, 1978 pp 250-253

ANAN'YEV, V. M., VINOKUROVA, I. A. and MASLOV, YU. G., Institute of Biophysics, Ministry of Health USSR, Moscow

[Abstract] Computerized EEG studies, employing the APROMIN [automatic transformation, recording, and treatment of multiprocess information] system, were used to analyze cortical function of six 2.5-3.5 kg rabbits subject to 3 or 30 min light or dark adaptation with or without Nembutal treatment. The resultant data demonstrated that this approach may be utilized in evaluating a large mass of information on cortical function since individual differences in the EEG responses of the rabbits were quite evident. Figures 3; references: 8 Russian.

USSR

EFFECTS OF INTERMEDIN ON THE BIOELECTRIC ACTIVITY OF BRAIN FORMATIONS IN RELATION TO BEHAVIORAL RESPONSES

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR in Russian No 4, 1978
pp 61-66

MEL'NYK, B. YE., DOROGAN, R. V. and KRIVAYA, A. P.

[Abstract] Studies were conducted to determine the interrelationship between pituitary function and the role of the limbic system and the hypothalamus in behavior, through analysis of the bioelectric activities of the latter two systems in relation to intravenous administration of 10-20 U/kg of intermedin to sexually mature rabbits and rats. Evaluation of the EEG patterns showed that intermedin potentiates the bioelectric activity of the various limbic and hypothalamic nuclei in direct relationship to the administered dose, with the exception of the paraventricular nuclei where 10 U/kg of intermedin was more effective than 20 U/kg. Electrical stimulation of the amygdaloid nuclei in conjunction with intermedin administration facilitated various behavioral responses, particularly those classed as orientative and avoidance reactions. The sum of the data indicated that the median hypothalamus regulates intermedin secretion and its stimulation leads to increased intermedin secretion, while the premammillary bodies exert an inhibitory effect on intermedin secretion. Figures 2; references 13: 6 Western, 7 Russian.

USSR UDC 633.11:575.1

GENETIC CONTROL OF QUALITATIVE CHARACTERISTICS OF SPRING WHEAT GRAIN

Moscow GENETIKA in Russian No 3, Vol 14, pp 389-395 manuscript received 21 Feb 77

BEBYAKIN, V. M. Scientific Research Institute for Agriculture of the South East, Saratov

[Abstract] Saratovskaya 29, Red River 68, Saratovskaya 36, Tselinogradskaya, Saratovskaya 210, Manitoba 3, Selkird, Revard, Krasnaya Zvezda, Atlas 66, Diamant, and Akmolinka were used in crossing experiments. The inheritability of the characteristics--weight, protein, hardness, glutin, lysine, flour strength, and others--varied widely. Protein content was especially dependent upon environmental factors. The contribution of genotype to these characteristics was not very great. For hardness the range was 0.48--.66%, for protein 0.12-0.30%, for gluten 0.18-0.22. A new method of analysis is necessary, and an electrophoretic approach is cited which has been applied successfully. References 9: 4 Russian, 5 Western.

USSR UDC 633.791:631.812.82

EFFECT OF THE FORM OF NITROGEN FERTILIZERS ON SEVERAL PHYSIOLOGICAL-BIOCHEMICAL PROCESSES, YIELD AND QUALITY OF HOPS

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian No 4, 1978 pp 434-38 manuscript received 22 Nov 77

LESIK, B. V. and SHABRANSKIY, A. S., Ukrainian Agricultural Academy, Kiev

[Abstract] The authors examined hops variety Klon 18 in field experiments during 1976-77 to determine changes resulting from nitrogen fertilizer applications. The basic fertilizer application was 30 tons/hectare. Substances added to this were $P_{120}K_{160}$, ammonium nitrate, sodium nitrate, calcium nitrate, ammonium sulfate, urea, ammonium hydroxide, and anhydrous ammonia. Content of ascorbic acid and activity of catalase were estimated. Ascorbic acid generally increased; catalase was most active with ammonium hydroxide and anhydrous ammonia. All of the nitrogen fertilizers brought about greater chlorophyll content. Nitrogen, phosphorus, and potassium content in hop plants initially increased with all nitrogen fertilizers; with further growth nitrogen appeared to be greater in the variant with ammonium hydroxide and phosphorus with urea and ammonium forms of fertilizer. Daily average growth difference between the control group and the

groups with fertilizers ranged from 0.95-2.1 cm; in the period of side branch growth it was 0.3-1.4 cm. More intensive growth occurred with ammonium fertilizers. Leaf surface was also greater, especially with ammonium hydroxide and anhydrous ammonia. The authors conclude that the nitrogen fertilizers, especially ammonium forms, promote activation of physiological and biochemical processes in the hop plants. Yield and quality were also significantly increased with all of the fertilizers. References 14: 12 Russian, 2 Ukrainian

USSR

UDC 581.1.032

VIABILITY OF WINTER WHEAT AND RYE SEEDS IN FLOOD CONDITIONS

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian No 4, 1978 pp 383-86 manuscript received 16 Sep 77

KOLBASINA, E. I. and ZHIL'TSOVA, V. V., Moscow Branch, All-Union Scientific Research Institute of Plant Growing imeni N. I. Vavilov, Mikhnevo

[Abstract] Researchers examined the effect of flooding on winter wheat and rye seeds and seedlings to select for hardiness. Experiments were conducted in 1975-76 with seeds of winter wheat Mironovskaya 808, Bezostaya 1, Il'ichevka and Avrora. Length of submersion and water temperature (24°, 15°, 0°, + 2°C) were examined. Seedlings 0.5-1.0 cm were also flooded with the same water temperatures. The control group (not flooded) had the best survival rate. Flooding at 0, +2°C led to decreased survival (Mironovskaya by 20%, Bezostaya 12-27%, Il'ichevka 23-31%). At 15° for four days, the survival rate for the first two varieties (both seeds and seedlings) went down by 12 and 15%. All died at 24°. The method of Vlasyuk and others was used in testing seeds of 336 winter wheat varieties at 23° and 17° flooding for 4 or 5 days and 128 winter rye at 23° for two days. Survival was increased; it was 86-99% for 17°C (five days) and for 23° (four days) survival was 3-43%. The most successful wheat varieties were K46607 Sylvia (W. Germany), K44830 Falco (Netherlands), and K45702 Meister (W. Germany). The best rye varieties were Finnish (VIR catalog numbers P-969, P-1063, P1019, K8192, and P-10307). Figures 2; references: 10 Russian.

USSR UDC 581.133.1.5:664.121

EFFECT OF COMBINED FERTILIZERS ON PRODUCTIVITY AND TECHNICAL QUALITIES OF SUGAR BEETS

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian No 4, 1978 pp 402-05 manuscript received 6 Jul 77

KHOMENKO, A. D., BOGDANOVA, A. M., SIROTA, V. G., KHELEMSKIY, M. Z., POYEDINOK, N. T. and GOMANYUK, D. G., Institute of Plant Physiology of the Academy of Sciences Ukrainian SSR, Kiev; All-Union Scientific Research Institute of the Sugar Industry, Kiev

[Abstract] The effect of ammophos(plus ammonium nitrate and potassium chloride) and nitroammophoska were examined on yield, sugar content, non-sugar components, and technical indicators of sugar beets. Doses were N--88.9 kg/hectare, P_2O_5--90, K_2O--102.5. Another group received a mixture of ammonium nitrate, superphosphate and potassium chloride in the same doses. The experiments were conducted in 1974-75 at the Byelotserkovskaya experiment station. Yield of three test groups (ammophos, nitro ammophoska, and the mixture of ordinary fertilizers) was equal. Yield of a group without fertilizers was less. With nitroammophoska, the sugar content was higher. Other groups were equal in sap quality, sugar content in molasses, and yield of sugar in the beet. The addition of phosphamide insecticide with nitrophoska sulfate (N, P_2O_5 and K_2O in ratio 10:10:10) yielded a crop increase of 42 centners/hectare (three year average) and a higher yield of sugar resulted. References: 4 Russian.

USSR UDC 581.522.4;581.134.4;581.134.5

EFFECT OF TRACE ELEMENTS ON HARDINESS AND PRODUCTIVITY OF WINTER CROPS

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian No 4, 1978 pp 375-82 manuscript received 14 Mar 77

GIRFANOV, V. K., VOLOD'KO, M. M., FAYZULLIN, A. D. and SAVKO, V. G., Institute of Biology of the Bashkir Branch of the Academy of Sciences USSR, Ufa

[Abstract] The influences of manganese,zinc, and copper were examined on winter wheat and rye metabolic processes, hardiness and productivity. Field and greenhouse experiments were conducted in 1963-75 with winter wheat Ul'yanovka on gray forest soils and winter rye Kazanskaya on leached chernozem. Trace elements were put directly in the soil in 1963-64 (20 kg/hectare copper, zinc; 25 kg manganese) or powdered on seed (45 kg Mn, 35 Cu

and Zn per 100 kg seed). Content of RNA increased in tillering nodes receiving Mn and Cu, whereas DNA decreased. Mn and Cu contributed to higher phosphorus content and its acid soluble fraction at low temperatures during the adaptation process. Mn raised the content of phosphate fractions in winter rye in the fall-winter-spring period. Mn and Cu increased phosphorus and protein nitrogen (and decreased nonprotein nitrogen) in tillering nodules of winter wheat. Mn and Cu exhibited a positive effect on dehydrogenase activity. All three elements also promoted peroxidases. Mn and Cu affected oxygen exchange; increased water soluble sugars were noted. Positive effects with hardiness and productivity were also noted. Figure 1; references 30: 29 Russian, 1 Western.

USSR

UDC 631.1+631:58.03/07

HOW TO AVOID LODGING OF CEREALS

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian No 4, 1978 p 442

[Review by F. L. Kalinin of the book "Yak Zapobigti Vylyagannyu Khlibiv"by G. R. Pikush, A. L. Grinchenko, and M. I. Pykhtin, "Urozhay" 1976, 18,000 copies, 136 pages, 16 diagrams, 61 tables.]

[Abstract] The authors review prevention-of-lodging research in the USSR and other countries. Damage due to lodging is shown. The morphological-anatomical and physiological-biochemical bases for resistance to lodging are included. It is established that physiological processes are disturbed in lodged plants during the period of grain ripening. Application of traditional agricultural technology (dates, norms and methods of planting, fertilizers, etc.) has been inadequate for prevention. An effective means for lodging prevention has been application of retardants which provide for effective cultivation of tall grains in intensified farming. One widely used retardant is chlorocholine chloride. The results of ten years of research on this retardant with winter wheat in the Ukraine are described. It is applied to plants (to prevent lodging) and to seeds (for winter hardiness and drought resistance). Application of the retardant on wheat under irrigation is economically feasible. Other grains--rye, barley, oats and rice--can benefit from chlorocholine chloride to prevent lodging. Latter chapters are devoted to discussing experimentation with the retardant, its economic aspects, and guidelines for its use. The book is recommended for managers of kolkhozes and sovkhozes and plant growers.

USSR

UDC 362.11.003.1

COST EFFECTIVENESS OF HOSPITALS

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 4, 1978 pp 77-80

NIZAMOV, I. G., docent, Department of Social Hygiene and Health Administration, Kazan State Institute for the Advanced Training of Physicians imeni V. I. Lenin

[Abstract] A method is described for the calculation of cost effectiveness of hospital beds which is based on the following factors: length of hospitalization in relation to disease and average annual bed occupancy; estimation of additional patients that could be hospitalized if average bed-stay was at the oblast, republic, or all-union mean level; estimation of additional number of patients that could be hospitalized if the average length of hospitalization corresponded to the average for the oblast, republic or the USSR; and economic loss due to irrational/ineffective use of hospital bed capacity. The point of the analysis is to obtain a comparison vis-a-vis average data for a given oblast, republic, or the USSR as a whole. References: 5 Russian.

USSR UDC 617-001.17-089.843-032:611.79)-059:615.38)-089.168-07:616.1-008.1

COMPARATIVE DATA ON THE INFLUENCE OF DIRECT AND INDIRECT TRANSFUSION OF BLOOD ON THE "TAKE" OF AUTOTRANSPLANTS IN BURN PATIENTS

Moscow KLINICHESKAYA MEDITSINA in Russian Vol 56, No 7, Jul 78 pp 114-117
manuscript received 24 Mar 76

PERVEYEV, V. I., candidate of medical sciences, and TARANOV, S. V., Department of Pathological Anatomy and Clinic of Military Field Surgery of the Military Medical Faculty of Tomsk Medical Institute

[Abstract] Direct transfusion of blood is widely used in treatment of burns and this study examines the effect of direct transfusion--on the blood supply, on functioning of internal organs, on the "taking" of autografts--as compared to the effect of indirect transfusion. Data on 520 direct transfusions to 80 patients with deep wounds of 10 to 75% of the body surface and on indirect transfusion of preserved blood to 40 patients with deep wounds of 10 to 45% body surface were examined. Patient ages were from 13 to 85. The direct transfusion was carried out with the NIIEKhAI, model 210 apparatus. [NIIEKhAI=Scientific Research Institute of Experimental Surgical Equipment and Instruments]. The direct method lowered capillary penetrability, it improved the microcirculation and function of the myocardium and kidneys, and had a more positive effect on blood indices than did the indirect transfusion. Direct transfusion of 400-450 ml of blood did cause some overloading of the heart in older patients and those affected with pneumonia and had to be lowered to a volume of 200 ml. The direct transfusion was also found to accelerate the "take" of the autografts. References: 12 Russian.

USSR UDC 616.137.83+616.147.3]-001.45

GUNSHOT WOUND OF THE MAIN FEMORAL VESSELS

Leningrad VESTNIK KHIRURGII in Russian Vol 120, No 5, May 78 p 94

BATVINKOV, N. I. Clinic of Facultative Surgery, Grodny Medical Institute

[Abstract] Patient entered the clinic on 3 Nov 76, suffering from wounds on the right thigh caused by the explosion of a package of cartridges. Condition was serious, pulse - 100, arterial pressure 90/60, a chunk of skin 3.5 cm square was missing, and there was extensive soot around wound. Patient was in IInd stage of shock. Operation revealed that in addition to thrombosis of the femural artery, there was a 2.5 cm cut in the femural vein, and 7 cm distal from this, another 2 cm cut. An intraoperational arteriography and a thromectomy were performed. During the operation the patient received 2.5 liters of blood. Antiinflammatory post-operative treatment was given. On 7 Dec 76, the patient was released in a satisfactory condition. After 1

year there were no complaints about the leg and pulse was normal. Patient is now serving in the Soviet Army.

USSR UDC 617-001.17-06:616.379-008.64

FEATURES OF THE CLINICAL COURSE AND TREATMENT OF BURNS IN SEVERE DIABETES MELLITUS CASES

Leningrad VESTNIK KHIRURGII in Russian Vol 120, No 5, May 78 pp 91-92

KUL'BAKA, V. S., candidate of medical sciences and KOZINETS, G. P., Clinic for the Treatment of Burns, Kiev Scientific Research Institute for Hematology and Blood Transfusion

[Abstract] A case history of the title problem. A 16 year old male entered the clinic with flame burns: II-IIIA (8%), IIIb (32%), in heavy shock, a Frank Index of 110 units. Patient had suffered from diabetes since age 5. Novocain, polyglukin, lactasol, protein preparations, and insulin (120-150 units daily), and a 5% solution of glucose, as well as other drugs were given. He exhibited adynamia, repeated vomiting, tachycardia (120/min); blood pressure was 100/60. Transfusion was hindered by decompensation for diabetes. Patient suffered from acute toxemia and septitoxemia. Coombs reaction was tested after patient had acute post-transfusion reaction. During treatment patient received: 5,750 ml of blood, 1,625 ml plasma, and 4,350 ml albumin and protein. An aerosol treatment of oxycort had a negative effect on the diabetes. A 1:5,000 solution of furacillin was applied. During six operations 4,400 cm^2 of grafts were made. On 30 Jul 77 the patient was released in satisfactory condition (he had entered on 2 May 76). One month later he had returned to school, six months later he received additional grafts, and is receiving a daily dose of 80 units of insulin. References: 6 Russian.

USSR UDC 616-001.17-06:616.3-002.44

ACUTE ULCERS OF THE DIGESTIVE TRACT IN THE BURNED

Leningrad VESTNIK KHIRURGII in Russian Vol 120, No 5,, May 78 pp 87-91

BIKHRIYEV, B. S., professor, and PARIS, YE. I. candidate of medical sciences Department of Thermal Injuries, Military-Medical Academy imeni S. M. Kirov; 2nd Department of Surgery, Leningrad Institute for the Advanced Training of Physicians imeni S. M. Kirov

[Abstract] Of the total (not given) number who died of burns at the Academy, 48 had acute ulcers. In 23 of the cases there were multiple ulcerations. Forty four of the patients were in acute shock, pointing to hemodynamic disturbances rather than infection. Seventeen had bleeding ulcers, in 4 this was a factor in causing death. Nine patients had perforated intestinal tracts. These were observed from the 6th day to the 61st day after receiving the burns. Diagnosis is hindered by the changes in circulation and biochemistry and treatment is hindered by the patients' condition. Western experience is briefly surveyed. All nine patients who were operated on died of post-operative complications. No specific recommendations are made, it being only desired to focus attention on the problem. Fibrogastroscopy and laparoscopy might be promising for early diagnosis. References 13: 3 Russian, 10 Western.

USSR UDC 616.12-005.4-085.84

USE OF LOW FREQUENCY, LOW STRENGTH ELECTROSLEEP IN THE TREATMENT AND REHABILITATION OF PATIENTS WITH ISCHEMIC HEART DISEASE (ANNOTATED RECOMMENDATIONS)

Moscow VOPROSY KURORTOLOGII FIZIOTERAPII I LECHEBNOY FIZICHESKOY KUL'TURY in Russian No 4, 1978 pp 83-84

KAMENSKAYA, N. S., Moscow

[Abstract] Recommendations are given for the use of various combinations of low frequency currents and current strengths in electrosleep therapy in conjunction with appropriate diets (eg. No 10 diet) in the treatment of patients in various stages of coronary heart disease, either as a preventive measure or for rehabilitation. Indicated also are contraindications for the use of electrosleep therapy in coronary patients.

USSR UDC 616.12-008.318-089.28-059:615.83]-035.1

POTENTIAL FOR PHYSICAL THERAPY OF PATIENTS WITH IMPLANTED CARDIAC PACERS

Moscow VOPROSY KURORTOLOGII FIZIOTERAPII I LECHEBNOY FIZICHESKOY KUL'TURY in Russian No 4, 1978 pp 37-39 manuscript received 19 Dec 77

LUZHINA, N. V., Institute of Cardiovascular Surgery imeni A. N. Burdenko, Academy of Medical Sciences USSR, Moscow

[Abstract] Experiments with dogs and with 92 patients with implanted Soviet (81 patients, EKS-2) and foreign (1 patient, Tesla; 2 patients, Medtronic) cardiac pacers demonstrated that such patients can be subjected to microwave, ultraviolet, ultrasonic, and diadynamic current therapies without adverse effects on pacer function. The only contraindicated therapy consisted of d'arsonvalization. References: 4 Russian.

USSR UDC 616.13-004.6-053.7-085.859:615.84

EFFECTS OF ELECTROSLEEP IN COMBINATION WITH HEALTH RESORT AND CLIMATOLOGIC TREATMENT OF ASTHENIC CORONARY HEART DISEASE PATIENTS

Moscow VOPROSY KURORTOLOGII FIZIOTERAPII I LECHEBNOY FIZICHESKOY KUL'TURY in Russian No 4, 1978 pp 23-26 manuscript received 7 Feb 78

PONOMAREV, F. I., Base Sanatorium imeni V. V. Kuybyshev, and the Yalta Institute of Physical Therapy and Medical Climatology imeni I. M. Sechenov

[Abstract] Clinical chemistries for 135 male patients, 35-45 yr old, with coronary heart disease were correlated with the effects of electrosleep used in conjunction with approved health resort and climatologic therapy. The results showed that the various biochemical indicators of the blood coagulating system and fibrinolytic system, as well as of lipid metabolism in general, were markedly normalized in patients subjected to electrosleep in comparison with patients in whom electrosleep was excluded from the therapeutic regimen. Furthermore, the improvements with electrosleep induced with 80-100 Hz current (4-10 mA, 30-60 min/day, 12 procedures total) were superior to those obtained with a 20-30 Hz current. References: 7 Russian.

USSR UDC 616.1-085.83-039.76

CURRENT REHABILITATION OF CARDIOVASCULAR PATIENTS

Moscow VOPROSY KURORTOLOGII, FIZIOTERAPII I LECHEBNOY FIZICHESKOY KUL'TURY in Russian No 4, 1978 pp 1-7 manuscript received 23 Mar 78

BOGOLYUBOV, V. M., Central Institute of Health Resort Science and Physical Therapy, Moscow

[Abstract] A review is provided of WHO recommendations for the rehabilitation of cardiovascular patients, with special notes on practices in the USSR. In particular, in the USSR the basic indicator for transferring a patient with an infarct from the hospital to a sanatorium is attained when the patient is able to take walks in the corridor and go up a staircase (20-30 steps) 2-3 times a day. References 26: 17 Russian, 2 Polish, 7 Western.

USSR UDC 617-089.581.41-036.8

FACTORS INFLUENCING THE EFFECTIVENESS OF ELECTROACUPUNCTURE ANESTHESIA

Moscow ANESTEZIOLOGIYA I REANIMATOLOGIYA in Russian No 4, Jul/Aug 78 pp 40-42

TRESHCHINSKIY, A. I. and BASMANOV, S. N., Department of Anesthesiology and Resuscitation, Kiev Institute for the Advanced Training of Physicians

[Abstract] Studies on the relationship between electroacupuncture analgesia and treatment with narcotic analgesics in the case of human volunteers demonstrated that the latter abrogated the analgesic effects of electroacupuncture,, which suggested to the authors involvement of an enkephalin mechanism. Further, data on the relationship between electroacupuncture and pain thresholds were equivocal and pointed to the need for further investigations along these lines. References 9: 4 Russian, 5 Western.

USSR

UDC 617-089.584-07:616.12-008.1-072.7

CENTRAL AND PERIPHERAL HEMODYNAMIC INDICATORS OF ANALGESIC EFFICACY OF GENERAL ELECTROANESTHESIA

Moscow ANESTEZIOLOGIYA I REANIMATOLOGIYA in Russian No 4, Jul/Aug 78 pp 3-9

DARBINYAN, T. M., KUZIN, M. I. and SHLOZNIKOV, B. M., Department of Anesthesiology and Resuscitation, Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] The analgesic efficacy of general electroanesthesia was evaluated in terms of central and peripheral hemodynamic parameters of 98 patients, 18-70 yr old, undergoing chest, abdominal, or peripheral vascular surgery under nitrogen oxide:oxygen (1:1 or 2:1). The resultant findings demonstrated that optimum analgesia was obtained with 20-40 mA angle current when applied at a frequency of 100 impulses/sec, with an impulse duration of 0.3 msec. Figures 6; references 16: 4 Western, 12 Russian.

USSR

UDC 616-001.4:617-022+615.33

STAPHYLOCOCCAL WOUND INFECTIONS AND ANTIBACTERIAL THERAPY

Leningrad VESTNIK KHIRURGII in Russian No 8, 1978 pp 93-97

KOLKER, I. I., KOSTYUCHENOK, B. M., MARSHAK, A. M., VUL', S. M. KRUGLOVA, A. A., VANDYAYEV, G. K., BLATUN, L. A., LUNACHARSKAYA, T. V. and MAKARENKOVA, R. V., Microbiology and Immunology Laboratory, Group for the Clinical Approval of New Antibacterial Preparations, and the Department of Wounds and Wound Infections, Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] Clinical and bacteriologic studies conducted on 315 patients with various pyogenic complications (infected wounds, septicemia, mastitis, etc.) demonstrated that 60% of all cases were due to staphylococcus, 16.3% to streptoccus, and 10.1% to Pseudomonas aeruginosa. A discussion is presented of the difficulties in instituting effective antibacterial chemotherapy, particularly in the case of staphylococcal infections, because of resistance and the need for careful epidemiologic and bacteriologic workups; the former to provide information on the spread of resistant bacterial pathogens, and the latter to determine susceptibility spectra to drugs.

USSR

RAPID HEALING

Moscow IZOBRETATEL' I RATSIONALIZATOR in Russian No 7, 1978 pp 26-27 & 33

KARLOV, M., Special Correspondent, Vitebsk

[Abstract] A report is provided on the work of Professor A. M. Demetskiy and his associates at the Vitebsk Medical Institute in securing functional replants of amputated extremities in dogs through the use of magnetic fields. During autotransplantation, the amputated extremity is exposed to a magnetic field, permitted to "rest" for 3 h, and then is reimplanted. Following transplantation, the extremity is exposed to a constant electromagnetic field (100-200 oersted) for 10-30 min for the next 7-15 days. There are no transfusions, drugs, or antibiotics during the entire procedure or during the postoperative phase. Further studies are being conducted on the preservation of organs for transplantation under the influence of electromagnetic fields. The use of electromagnetic fields in autotransplantation has been granted an Author's Certificate No 594969. Figures 2.

USSR

HIGH FREQUENCY ACUPUNCTURE

Moscow IZOBRETATEL' I RATSIONALIZATOR in Russian No 7, 1978 pp 24-27

GOL'DBERG, B.

[Abstract] A brief report is presented of the work of Yu. P. Mironenko, candidate of medical sciences, dealing with "electropuncture reflexotherapy". The method essentially relies on the application of an electric current to an acupuncture point in order elicit resonance oscillations in a given reflex arc and thus facilitate its function. Thus far, 240 patients with various complaints have been treated in this manner, of whom 232 have reported marked improvements in their condition. Figures 2.

USSR

UDC 616-036.88-089-053.88

MAJOR CAUSES OF DEATH IN SURGICAL PATIENTS OVER 50 YEARS OF AGE

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 4, 1978 pp 46-49
manuscript received 23 Dec 76

IZMAYLOV, G. A., candidate of medical sciences, Department of General Surgery, Kazan Order of Labor's Red Banner Medical Institute imeni S. V. Kurashov

[Abstract] Case histories were analyzed of 745 surgical patients in Kazan in order to delineate the major causes of death. Of this group 561 (75.3%) underwent surgery; the patients ranged in age from 50 to 94 years. The results demonstrated that 39.7% of the deaths occurred after emergency abdominal surgery. Of the elective procedures, exploratory laparotomy accounted for 8.4% of the deaths. Factors which were primarily responsible for postoperative mortality included delayed hospitalization, delayed surgery, and errors in diagnosis. Peritonitis was the most frequent complication of abdominal surgery leading to death. References: 5 Russian.

USSR

UDC 614.256

AN ANALYSIS OF MEDICAL ERRORS

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 4, 1978 pp 1-6 manuscript received 18 Oct 77

ROKITSKIY, M. R., professor, Department of Pediatric Surgery, Kazan' Order of Labor's Red Banner Medical Institute imeni S. V. Kurashov

[Abstract] The most common errors in medical practice were reviewed and classified. The results showed that such errors can be fitted into the following 4 categories: errors in diagnosis, errors in the therapeutic approach, technical errors in management (e.g., surgical) or diagnosis (e.g., instrumental manipulation), and organizational (administrative, managerial) errors. In any given case careful analysis should be made of the causative or contributive factors and measures should be taken to correct the situation. References 7: 1 Western, 6 Russian.

USSR

ADMINISTRATION OF ZOOVETERINARY SUPPLIES

Moscow VETERINARIYA in Russian No 7, 1978 pp 15-18

SUBBOTIN, D. I.

[Abstract] As a result of measured decentralization the ZOOVETSNAB organization in the Volgograd oblast has increased its provisions of zooveterinary supplies to the state and collective farms by 115% during the first 2 years of the 10th Five-Year-Plan. This was accompanied by an increase of productivity of its workers by 8%, and by an increase in the organization's income of 274.3 thousand rubles. Outstanding individuals and collectives in the organization who have met or exceeded their socialist responsibilities have been duly recognized and received awards and prizes. Furthermore, the collective as a whole has taken upon itself the responsibility of further improving the quality and quantity of zooveterinary supplies provided to the farms in the oblast during the third year of the present Five-Year-Plan. Figure 1.

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UDC 619:614.9:591.17.636.083.1

EFFECTS OF EXERCISE ON CATTLE IN COMMERCIAL FARMS

Moscow VETERINARIYA in Russian No 7, 1978 pp 30-33

NIKONOROV, P. N., Siberian and Far Eastern Institute of Experimental Veterinary Medicine

[Abstract] Studies conducted on barn-kept cattle in the Tomsk oblast demonstrated that regular physical exercise (free walking) improved the physiological state and productivity of the dairy and beef herds, and resulted in greater weight gain by calves. Cattle subjected to a regimen of exercise showed lower morbidity which was correlated with a number of immunologic and biochemical parameters and led to the recommendation that this form of free exercise be made compulsory at cattle breeding establishments in Siberia and the Far East.

USSR UDC 619;616.981.51:616.981.57-084.47

COMBINED VACCINES AGAINST ANTHRAX AND BLACKLEG

Moscow VETERINARIYA in Russian No 7, 1978 pp 49-51

ODARENKO, K. I., ZHANUZAKOV, N. ZH., ZADOROZHNYY, I. F., BEYSENOV, B. B., IL'YASOV, B. K., DUTOV, M. M. and KASENOV, S. K., Kazakh SSR

[Abstract] Information is provided on field trials conducted on sheep and cattle in the various oblasts and rayons of the Kazakh SSR of a combined anthrax-blackleg formol vaccine developed at the Kazakh Scientific Research Institute of Vaccines. The results showed the vaccine to be of very low reactogenicity, with a single subcutaneous immunization providing complete protection of about a year's duration.

USSR UDC 619:577.44:616-001.4

ULTRASONIC WOUND TREATMENT

Moscow VETERINARIYA in Russian No 7, 1978 pp 76-78

DUBOVSKIY, D. A., Vitebsk Veterinary Institute

[Abstract] Studies were conducted on cattle with cutaneous surgical wounds (12 cm long, 2.5-3 cm deep) to determine the effects of ultrasound application (880 kHz, 0.6 W/cm^2) on the healing of clean and septic wounds. In general, the use of ultrasound promoted earlier formation of granulation tissue and a connective tissue bed with a tensile strength ca. 2.3 times greater than that seen in wounds without ultrasound treatment. Wounds artificially infected with pyogenic cocci and subjected to ultrasound treatment in combination with 3% hydrogen peroxide containing furacillin (1:5000) healed, on the average, 8 days earlier than control infected wounds.

USSR UDC 619:632.95:636.085/.086

PERMISSIBLE RESIDUAL CONCENTRATIONS OF PESTICIDES IN FEEDS

Moscow VETERINARIYA in Russian No 7, 1978 p 85

OKUN'KOV, P. S., Main Veterinary Administration, Ministry of Agriculture USSR

[Abstract] Maximum permissible concentrations of pesticides in feeds, as established by the Ministry of Agriculture USSR, are given below (in mg/kg):

Pesticide	Dairy cattle, Egg-laying fowl	Fattened animals & fowl
Aldrin (dildrin)	na*	na
Antio	2.0	2.0
Atrazine	1.0	1.0
Butiphos	3.0	3.0
Valekson	--	0.6
Hexachlorocyclohexane (all isomers)	0.05	0.2
heptachlor (hepatochlor epoxide)	na	na
DDT (all isomers & metabolites)	0.05	0.05
2,4-D (all derivatives)	0.1	0.6
Dinitroorthocresol	na	na
Dursban	0.2	0.2
Carbophos	2.0	5.0
Metaphos	na	na
Methylmercaptophos	1.0	1.0
Methylnitrophos	1.0	2.0
Arsenic-containing preparations	na (natural concentrations in feeds are considered to approach 1 mg/kg)	na
Inorganic bromides	35.0	35.0
Polychlorocamphene	na	0.25
Polychloropinene	na	0.25
Na thiocyanate	--	0.5
Hg-containing preparations	na (natural concentrations of Hg in green succulent feed and grain forage do not exceed 0.02 mg/kg; in combined feeds with fish meal should not exceed 0.05 mg/kg)	na
Sevin	1.0	1.0
Tetramethylthiuram disulfide	na	na

Table continued next page

Carbon disulfide	10.0		10.0
Trichloropmetaphos	2.0		2.0
Phosphamide	2.0		2.0
Phthalophos	1.0		2.0
Chlorophos	1.0		3.0
Carbon tetrachloride	50.0		50.0

na* = not allowed

USSR

AN ANIMAL BREEDING SYSTEM WITHOUT WASTES

Moscow TEKHNIKA I NAUKA in Russian No 6, 1978 pp 3-6

POPOV, A., Secretary of the Central Committee of the Agricultural Workers Union; CHERNOV, B., engineer; and KOVALEV, candidate of technical sciences, Chief of the Laboratory for Organic Fertilizer Systems of the State Scientific Planning Institute for Agriculture; CHERNOV, B. compiler.

[Abstract] Three separate reports present aspects of efforts to improve ways for removing and utilizing animal wastes in the large breeding systems that produce meat for Moscow and other cities. Such innovations as electronic devices for moving wastes to distribution points down an inclined chute, and centrifugal water removal appliances, are described, along with problems in their utilization. Drying and preparation of fertilizer pellets offers one solution for direct use of wastes. Another potential use is for biogas, since methane constitutes 65% of such gas and could be used for electric generation. Some practical attempts in innovative utilization of wastes are described in the final report, along with difficulties and shortcomings of the institutes working in this field. Specific recommendations to bring progress include formation of scientific production associations that would resolve technical problems in the above procedures. Figures 3.

USSR UDC 596:578.088.78

APPLICATION OF THE DETECTION THEORY TO MEASUREMENT OF THE BEHAVIORAL RESPONSES OF ANIMALS

Kiev VESTNIK ZOOLOGII in Russian, No 4, Jul/Aug 78 pp 3-8 manuscript received 27 Jan 78

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[Abstract] As a departure from traditional psychophysical methods used in studying human behavior, objective sensometry is being developed for studying the responses of animals to environmental changes. This method is based on the statistical theory of detection. The situations table which includes errors of the first kind (false-alarm probability) and of the second kind (missed-hit probability), indicates that the detection characteristics, i.e., the decision-making algorithm in the case of zoological objects, involves eight out of sixteen possible parameters. In experimental studies with white mice and lake frogs the Neyman-Pierson criterion was used for measuring the motor responses of these animals to acoustic signals, after the frequency-threshold characteristics had been established. In the process were also determined the directional characteristics of correct detection. Figures 2; references 19: 14 Russian, 5 Western.

USSR UDC 612

POSSIBILITY OF VOLUNTARY REGULATION OF THE HEART RATE

Moscow FIZIOLOGIYA CHELOVEKA in Russian No 3, 1978 pp 405-411 manuscript received 31 Jan 77

TIMOFEYEVA, A. N., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

[Abstract] Neuropsychologic experiments were conducted to determine whether volitional control can be exerted on the heart rate, in a study involving visual feedback (oscillographic pattern). Examination of the resultant EKG parameters obtained for 9 healthy women, 19-20 yr of age, failed to reveal volition-induced acceleration of the heart rate; similarly, the results with 11 neurasthenic females, 18-35 yr old, failed to provide evidence of sustained voluntary bradycardia. The present findings are at variance with other studies which purport to demonstrate voluntary control over the heart rate, and may indicate that a visual feedback is not adequate for such studies. Figures 3; references 14: 5 Russian, 9 Western.

CSO: 1840

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