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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS
BIOMEDICAL AND BEHAVIORAL SCIENCES
No. 72

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS
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No. 72

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
Agrotechnology

USSR/BULGARIA

UDC 632.937

BIOLOGY LABORATORIES IN BULGARIA

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 p 52

MATOV, G. N., scientific secretary of VASKhNIL [All-Union Academy of Agricultural Sciences imeni Lenin], and ADASHKEVICH, B. P., laboratory head of the All-Union Scientific Research Institute of Biological Methods

[Abstract] Twelve production laboratories are in operation in Bulgaria, involved in biological and integrated plant protection. The first of these were created in 1970 and are financed by agricultural chemical centers. They are almost all housed in new well-built buildings furnished with air conditioning with humidity control. Their main product is trichogram. Trichogram was used on an area of 73,000 hectares in 1975. In addition, biological preparations such as entobacterin are used on 30,000 hectares for integrated protection. "Dipel" is another one of these preparations. Trichogram is used to combat the maize moth on maize and the cabbage and other cutworms on sugar beets, cabbage, and peppers. Tests have been made on using egg destroyers to combat the apple codling moth in orchards. Trichogram is still cultured by hand even though the advanced know-how of Soviet scientists has been adopted, but plans have been made to purchase equipment for eight automated lines in the USSR for producing sitotroga. Considerable success has been achieved in the brief period in which trichogram has been used. It has proven to be an effective means of combating the maize moth in irrigated plots. The effectiveness of using trichogram on maize was 70 to 75 percent in the sphere of operation of the biological laboratory in the city of Vraz in 1975, and it reached 95 percent on individual farms. Bulgarian specialists explain the high effect of using trichogram on maize by the use of local species, steady irrigation of the maize, elevated discharge standards, and a great number of discharge points per hectare. The effectiveness of using trichogram on sugar beets has been 70 to 90 percent on average. Bulgarian specialists have begun to develop a standard for trichogram. A special set of instructions has been issued for the purpose of increasing the quality and output of trichogram by biological laboratories. All biological laboratories in Bulgaria operate on the cost accounting system. The laboratories pay the difference for the percentage of ineffectiveness of their product in combating the maize moth, thus creating an incentive to obtain a high-quality product. The staff of a biological laboratory ordinarily consists of 10 to 15 people. In addition to the laboratory head and an agronomist specializing in the use of trichogram, there is an agronomist specializing in integrated protective technics. Methods of integrated protection are being tested in Bulgaria and introduced for tobacco, grain, and vegetables. Biological and integrated methods of combating harmful organisms are being used more and more in Bulgaria and even greater use is expected to be made in the next 2 or 3 years.

USSR

UDC 632.3:634.1/.7

EXTENT OF HARM FROM BACTERIAL FRUIT TREE CANCER

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 p 39

DOROZHKIN, N. A., academician of the Belorussian SSR Academy of Sciences, and GRIGORTSEVICH, L. N., junior staff member of the Belorussian Scientific Research Institute of Potato Growing and Fruit and Vegetable Growing

[Abstract] Bacterial fruit cancer (causative agent *Pseudomonas syringae*) is widespread in Belorussia and strikes the apple tree, the pear tree, the plum tree, and the cherry tree. The most stricken of seed crops is the pear, and of pit crops the cherry. As far as the pear tree is concerned, at the Pruzhanskiy State Variety Plot for Fruit and Berry Crops, for example, on the average for 1972-1975 this disease struck 80 percent of the trees, and seven percent of them died. At the Brilevo sovkhos, Gomel' Oblast, in an area of 280 ha 45 percent of the apple trees were struck, and five percent of them died. Diseased trees experience retarded growth and their yield is often affected drastically. The disease occurs in two forms in Belorussia--brief and chronic. The short-lived form is most often encountered in young trees, some of which die within one vegetative period. The chronic form is evidenced in steady dying off of skeletal knots and in the formation of cracks and cancerous ulcers in the trunk, with the tree dying in a few years. Curative trimming of the branches and knots of diseased trees of some types at the end of July under specific conditions resulted in a five- to sixfold curtailment of the disease. Healing of cancer wounds and the formation of a callous have been aided by a curative paste called "Santar M" from Switzerland. Other applications have also been tried with poorer results, such as a mixture of clay and mullein. A three-time treatment of trees with "Benomil" or quinoine-fundazole has proven effective at certain stages of development. Three-time spraying of pear trees with quinoinefundazole in conjunction with spring trimming under commercial growing conditions has demonstrated very good results. Development of the disease was reduced fourfold and the yield of produce increased 37 to 42 percent. The additional yield amounted to 7.5 to 30.3 tons per hectare. Figures 2.

USSR

UDC 632.951:633.1

FOR WEEDING CEREALS IN COTTON SOWING ZONES

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 p 28

GULIN, V. D., KOLOMIYETS, A. F., and MIKHAYLYANTS, R. S.

[Abstract] Beginning in 1961 a sampling and study was made of less volatile forms of group 2,4-D herbicides, for the use of these herbicides on cereals in a cotton sowing zone is hampered by the danger of harming cotton plants

situated near the crop. The benzyl ether and amide of 2,4-D were selected from a great number of compounds tested. The benzyl ether is 10 times less volatile than the butyl, for example, and it is not so toxic to cotton plants. A study was made of the amide of the 2,4-D group on the Lenin-Yuly kolkhoz, Srednechirchikskiy Rayon, Tashkent Oblast, the Oktyabr' kolkhoz, Bulungurskiy Rayon, Samarkand Oblast, and on the Gallya-Aral 1 sovkhos. The plots of land ranged from 50 to 500 m², and application was repeated five times. The reference used was the butyl ether of the 2,4-D group. Five hundred liters per hectare were sprayed from a tractor-mounted bag-type spraying unit. Tests were made on crops of spring and winter wheat in the tillering phase. Annual weeds predominated. Both the amide and the benzyl ether of the 2,4-D group (the latter having been used on only 500 hectares) were found to be highly effective in suppressing dicotyledonous weeds, including varieties resistant to 2,4-D preparations widely used. The benzyl ether reduced weediness 90 to 91 percent, with a resulting increase in yield of 19 to 22 percent. Similar data was obtained for the amide. With a dose of 1 kg/ha the amount of weeds was reduced 76 percent, and 84 percent with a dose of 1.5 kg/ha. The yield of grain was 16 and 10 percent higher than the control figure. The respective figures for the butyl ether were 75 and 87 percent with an increase in yield of 14 and 2 percent. No harm was found to crops two to three kilometers away from areas of aerial spraying when a study was made of cotton plant, grape, and mulberry crops.

USSR

UDC 575.12:633.15

REACTIONS OF HYBRID CORNS AND THEIR PARENTAL FORMS TO INCREASED STAND DENSITIES

Moscow GENETIKA in Russian Vol 13, No 1, Jan 77 signed to press 26 Apr 76
pp 15-22

VEDENEYEV, G. I., Scientific Research Institute of Agriculture of the Southeast, Saratov

[Abstract] Corn hybrids were planted at two stand densities (20,000 and 60,000 plants per hectare) in order to determine changes in yield structure. The following lines were used: Kh44, Al16, VIR26, VIR101, Ykh590, W25. The experiments were conducted in 1974-1975 using ordinary agronomic techniques in Saratov Oblast'. Weather conditions were more favorable in 1974, while there was less precipitation in 1975. In the latter year the corn did not grow well and the average yield was around 25 quintals per hectare. Hybrids reacted differently to increased stand density, and grain yields ranged from 26.3 to 52.7 quintals per hectare at 60,000 p.p.h. and 34-47 q.p.h. at 20,000 p.p.h. The productivity of the VIR26 and Kh44 lines increased considerably under denser conditions. The general combining ability (GCA) of these lines also changes with increased stand density, the GCA of VIR26 increasing from 3 to 3.41, and that of Kh44 increasing from .99 to 5.68. Previous studies have shown that response to increased stands is genetically

determined. The present study supported this. For example, crossing two lines with GCA (Kh44 and VIR26) resulted in a 5 q.p.h. increase under increased density. In crossing lines with low GCA (W25 and Ykh590) the resulting hybrids produced 3.1 q.p.h. less under increased stand density. The highest yielding lines have high GCA. In 1974, 14 inbred lines of hybrids were studied. Their productivity varied with increased stand density. There is a weak correlation between the number of ears per plant at the two densities. The numbers of ears plays a decisive role in determining productivity. For the 20,000 p.p.h. the correlation coefficient was 0.77 for the lines, 0.48 for the hybrids, while for 60,000 the figures were 0.84 and 0.76. Thus, results obtained in the study of hybrid productivity at one stand density cannot be utilized to forecast productivity under other planting conditions. There is a complete lack of correlation between the productivity of parental lines raised at 20,000 plants p.h. and that of hybrids raised at 60,000 plants p.h., due to the weak correlation between the number of ears in the hybrids and in the parents, even though the other correlation coefficients are positive and substantial. In selecting hybrids for high yields under increased stand density the most rapid way to obtain information about parental forms is to study them under such density. The correlation coefficients between characteristics of parental forms raised at 20,000 plants p. h. and those of hybrids raised at 60,000 plants p.h. were as follows: in 1974, productivity - 0.996; number of ears 0.325; length of ears - 0.686; diameter of ears - 0.818; percent of grain output - 0.720; weight of 1,000 grains - 0.567. The coefficient between the productivity of hybrids in increased stand densities and the number of ears per plant on the parental form raised under the same conditions was 0.613, at a 5% level of significance. Tables 5; References 9 (Western).

USSR

UDC 632.954

WEED CONTROL IN POTATO PLANTINGS

Moscow ZASHCHITA RASTENIY in Russian No 4, 1976 pp 30-31

FILIPPOVA, N. V., candidate of agricultural sciences

[Abstract] Under conditions of excess moisture, as well as on ridges, mechanical cultivation alone in connection with potato planting is not possible. Therefore under such circumstances an antiweed complex is presently being used; such a complex combines the application of mechanical and chemical measures, with the result that weeds are effectively removed from the young crops with a simultaneous decrease of mechanical cultivation. Chemical weeding is not conducted for potatoes after the appearance of shoots; a number of herbicides are identified for application prior to this. Soil types suitable for herbicide application are listed. Figures 1.

USSR

UDC 632.954

A PROMISING FORM OF HERBICIDE

Moscow ZASHCHITA RASTENIY in Russian No 4, 1976 p 24

TERENT'YEVA, M. I., candidate of biological sciences, OVSISHCHER, M. R., candidate of technical sciences, and YELISEYEVA, I. A., engineer, All-Union Scientific Research Institute of Fertilizers and Soil Science, All-Union Scientific Research Institute of Chemical Plant-Protection Agents

[Abstract] An experimental comparison between the granulated and micro-encapsulated (time-release) forms of 2,4-D butyl ester was conducted recently, at the Smolensk experimental station of the VIUA (All-Union Scientific Research Institute of Fertilizers and Soil Science), in the application of this herbicide to winter rye. Application of the granulated form killed 50% of the weeds, whereas the encapsulated form resulted in the destruction of 72.1% of the weeds. The encapsulated form was more toxic than the granulated form. Neither form manifested any negative influence upon the rye.

USSR

UDC 632.982

STUDY OF ULTRASMALL-VOLUME SPRAYING

Moscow ZASHCHITA RASTENIY in Russian No 4, 1976 pp 26-27

STAROSTIN, S. P., candidate of agricultural sciences

[Abstract] A new spraying method - the method of ultrasmall-volume spraying (us-vs) is being extensively studied in the USSR and abroad. This method consists in the application of 0.5 to 5 liters of pesticide, undiluted by water, per hectare by means of aviation or ground equipment. The scientific institutes and organizations studying the method, the equipment, and the areas of use are listed. The AN-2 aircraft and the KA-26 helicopter are used for aviation ultrasmall-volume spraying, with imported "Tidget" flat-jet pulverizers and rotary pulverizers. A basic factor in developing us-vs ground equipment is the choice to be made between rod- and fan-type sprayers. Rods provide a uniform distribution of the agent and possess a wide scope, but have low productivity. Fans have a higher productivity, but the agent distribution is less uniform. Nonuniformity of agent distribution is particularly dangerous in the us-vs application of herbicides. Specifications have been developed for sprayers, and it is recommended that samples be built.

USSR

UDC 632.954:633.18

STAM-F-34 ON RICE

Moscow ZASHCHITA RASTENIY in Russian No 4, 1976 p 24

KOZISHKURT, N. YE., engineer, and OBUKHOV, A. D., candidate of technical sciences, Ukrainian Institute of Water Management Engineers

[Abstract] The expansion of rice cultivation with flooding is restricted in the USSR due to water scarcity. A rice variety has been developed for cultivation with sprinkler irrigation, with 7-10 applications per season, but the widespread introduction of this crop is hindered by furious weed growth. A series of field tests on sprinkler-irrigated young rice crops was conducted in 1968-1970, at the Rossiya collective farm in the Kherson Oblast. STAM-F-34 was used as the chemical weeding agent. With application in dry, windless, and hot weather, 93-96% of all the weeds had been killed by harvesting time, with no damage to the rice crop. In 1971-1975, STAM-F-34 was successfully used at the farm on flooded rice fields, with cultivation of the rice under a water layer; no inhibitory effect on rice growth was observed, and no residual content of the herbicide was detected in the rice crop.

USSR

UDC 631.551:581.1

(54) A METHOD OF ACCELERATING THE DEVELOPMENT OF WINTER CEREALS

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 6 (11) 535055 (21) 2109579/30-15 (22) 03.03.75 2(51) A 01 H 1/04; A 01 C 1/00

(72) MUSICH, V. N. and KVASNYUK, A. K. (71) All-Union Order of Lenin and Order of the Labor Red Banner Selection and Genetic Institute

[Text] A method of accelerating the development of winter cereals, which includes the growing of plants at a varied combination of a definite photoperiod and temperatures at nighttime and in daytime, distinguished by the fact that with the aim of decreasing the time periods for deriving the strain via acceleration of the initial development of the plants and increasing the multiplication factor, the plants are grown during the first 25-30 days with an 8-hour illuminated day and an illumination of not less than 8-10 lux and a temperature of 10°C, and in the dark period - at 5°C.

USSR

UDC 632.95.002

MATHEMATICAL FORECASTING OF PESTICIDE RESIDUES IN FRUIT

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 p 40

SPYNU, YE. I., professor, and IVANOVA, L. N., junior staff member, VNIIGINT OKS [All-Union Scientific Research Institute of Health and Scientific Technics, Department of Cybernetic Systems]

[Abstract] Mathematical methods are necessary for a logical summarization and analysis of the complicated interaction of the various factors influencing the process of pesticide extinction. The contamination of vegetation with pesticides depends on the physical-chemical properties of the preparation (volatility, solubility in water and fats, etc.), specific peculiarities of the plant (differences in chemical composition), climate factors (air temperature, amount of precipitation), and conditions of use, such as dosage and number of treatments. In conjunction with staff members of the Ukrainian SSR Academy of Sciences Institute of Cybernetics, a formula was obtained for forecasting the content level and length of retention of pesticides in fruit and vegetable produce. This formula makes it possible to predict the content of a preparation in produce at a specific moment of time when the following are known: The physical-chemical properties of the pesticide, chemical indicators typifying distinctive specific features of the crop, climate factors, and conditions of use. The formulas has been published in a spearate document entitled "Procedural Guidelines for Forecasting Residual Amounts of Pesticides in Produce." A test was made of the accuracy of using this method of forecasting by applying this formula to material from different zones of the USSR. Computed values were compared with those obtained from data on the dynamics of fruit and vegetable contamination. Prediction accuracy was 70 percent, as compared with 80 percent when using methods of chemical analysis for pesticides. The method is judged acceptable for practical purposes. Curves are given showing the comparison of data obtained at experimental plots and calculated by the formula. These curves show good agreement and significant differences in the rate of extinction of specific pesticides as a function of the climatic and geographical zones in which they are used. This formula makes it possible to determine periods of recent treatment with pesticides. Figure 1.

USSR

UDC 632.938.1

HARDY VARIETIES AND THE CROP CONSERVATION SYSTEM

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 pp 19-21

PERESYPKIN, V. F., corresponding member of VASKHNIL [All-Union Academy of Agricultural Sciences imeni Lenin], and SHAPIRO, I. D., doctor of biological sciences

[Abstract] Scientific and technological progress in agriculture has expressed itself in the form of higher yield levels and by the rapid concurrent

development of crop specialization and concentration. The tendency has been toward cultivating a more limited number of crops within a given area of land, thus, unfortunately, creating ideal conditions for the development, breeding, and propagation of harmful organisms. The role of crop conservation has thus become the most important factor in increasing crop yields and raising the quality of agricultural produce. Low crop yields are often due to an insufficient assortment of varieties resistant to pests and blight. This paper is devoted to achievements gained for a number of crops by the use of selection methods. Soviet selectors demonstrated for the first time the inexhaustible possibilities of creating plant varieties resistant to a great number of harmful organisms when academicians V. S. Pustovoyt and L. A. Zhdanov found a variety of sunflower resistant to harm caused by broomrape and the sunflower snout moth. It was demonstrated that the sunflower is a plant which can be protected from a variety of harmful effects almost completely by selection methods. The result of using selection methods can be computed in hundreds of millions of rubles. Newly developed resistant varieties of winter wheat, spring wheat, barley, rice, maize, cotton, sugar beet, flax, potato, tobacco, berries, and grapes are listed. It has been demonstrated by experience that the use of even relatively resistant varieties is a powerful factor in retarding the development and multiplication of pests and disease-causing agents. It is suggested that this fact be exploited extensively in developing a new strategy and tactics for plant conservation. The modern state-of-the-art of the plant conservation system presupposes an ideal combination of biological, agricultural science, chemical, physical, and other methods of protecting plants from pests and disease. This system must be tailored to a specific ecological and geographical region and to a specific crop. Relatively hardy varieties require considerably less care in the way of protective chemicals than non-resistant varieties. In a number of instances the use of relatively hardy varieties makes it possible to dispense with chemical treatment. The increasing role of hardy varieties in comprehensive crop conservation systems is laying extra burdens on selection centers, which are now in the process of developing varieties that not only have a high yield and are highly suitable for processing, but are also resistant to the most hazardous diseases and pests in a specific ecological zone of the country. Figures 3.

USSR

UDC 632.9:633.491/.3

COMBATING POTATO VIRUS DISEASES

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 pp 22-23

AMBROSOV, A. L., doctor of biological sciences, corresponding member of the Belorussian SSR Academy of Sciences, and SOKOLOVA, L. A., candidate of agricultural sciences, Belorussian Institute of Agricultural Crops

[Abstract] In Belorussia potato viruses of the mosaic group--X,S,M,Y,A,F--the rattle virus, and leaf-curling virus (L) are widespread and attack 30

to 80 percent of individual food varieties. The capacity for damage of these viruses is intensified in mixed infections. The X virus, for example, causes the common mosaic and results in a reduction in yield of 5 to 15 percent, and X + Y a rugose mosaic, resulting in a tuber harvest reduced by 15 to 77 percent. A streaked mosaic due to mixed infections of the X + Y + M or X + Y + rattle varieties reduces the yield 20 to 85 percent. Varieties of potato cultivated in Belorussia differ in degree of resistance and tolerance with respect to different viruses and combinations of them. With optimum agricultural practices all regionalized varieties are able to increase their tolerance, and this is taken into account in seed production. But agricultural practices alone are insufficient for producing a high-yield seed potato because the widespread viruses are capable of causing irreversible, severe forms of disease. A specific procedure is suggested for maintaining regionalized varieties in healthy condition. High-yield clones are selected which are healthy, as determined by visual examination and serological tests, and they are then multiplied in isolation from sources of viral infection and carriers. Agricultural practices and protective measures also enter into the procedure. Great importance has been attached to creating nutrients conforming to biological requirements and increasing tolerance. An obligatory measure is to thin out, especially in initial seed growing nurseries, by removing and destroying diseased clones, as well as in seed stock planting, by discarding plants with signs of severe viral disease. Thinning out should be done twice, when full shoots appear and the plants are 15 to 18 cm high, and in the full blossoming period; tops should be discarded two weeks before harvesting. This procedure has been tested and resulted in reduced damage from viral diseases and a 20 to 35 percent growth in yield. The institute is continuing research on improving the health of seed potatoes by making serological diagnostic studies of viruses and identifying and studying the biological features of carriers, by finding optimum nutrients for increasing the tolerance of varieties, and by testing initial and selection-process potato material for tolerance and resistance. Studies are also being done on the reaction of each regionalized variety to viral infection. Procedural guidelines are being developed for seed production farms, giving a calendar schedule for carrying out measures for protecting potatoes from viral diseases.

USSR

UDC 632.954:633.15

HERBICIDES AND THE QUALITY OF MAIZE GREENS

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 p 23

YAKOVLEV, A. P., professor, and KURBATSKIY, N. YA., and TSIKIN, YU. YE., graduate students, Moscow State University

[Abstract] Triazine herbicides ("Simazine" and "Atrazine") are widely used for weeding maize in Moscow Oblast, and the amount of area treated with these preparations is increasing yearly. "Simazine" was introduced in 9,300 hectares in 1973 and in 26,000 in 1975, resulting in an increase

in yield of greens of from 28 to 86 centners per hectare. A study was made in 1974-1975 on the weed-suppressing effect of triazine herbicides, and of their effect on the yield and quality of maize. Under specific soil conditions and with specific varieties of maize, using a full range of mineral fertilizers, it was found that "Simazine" destroyed 79 to 100 percent of the annual varieties of weeds and "Atrazine" 81 to 93 percent. Destruction of perennials did not exceed 21 to 32 percent. Reduction in weeds resulted in an increase in the yield of greens and fodder units. The quality of greens also improved. The content of raw protein increased 2.2 percent with "Simazine" and 1.4 percent with "Atrazine." The content of carotene and vitamin C also increased. The quantity of reducing sugars and cellulose was reduced slightly. It was thus demonstrated that triazine herbicides suppress weeds and result in increased yield and improved quality of maize greens.

USSR

CONSTANT ATTENTION TO AND CARE FOR CONSERVATION PERSONNEL

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 pp 2-5

BABCHUK, I. V., director of Administration of Plant Conservation of the Ukrainian SSR Ministry of Agriculture, SABLUK, V. T., deputy director of the Ukrainian Republic Plant Conservation Station, and GRIGORENKO, V. A., chief agronomist-inspector

[Abstract] More than 11,600 people are occupied with planning strategy for combating pests, plant diseases, and weeds, in plant conservation stations, biology laboratories, departments, and teams, toxicology monitoring laboratories, diagnostic and prognostic laboratories, and at observation posts in the Ukrainian SSR's kolkhozes and sovkhozes. Such an enormous army of conservationists requires constant attention. This is especially true of farming specialists. The Ukrainian SSR Ministry of Agriculture and the Administration of Plant Conservation are constantly busy in educating, updating the knowledge, and increasing the skills of conservation personnel, and in creating a situation of high labor productivity. Experience has shown that where party and State organizations have assisted and instilled initiative in specialists, resulting expenditures for conservation measures for combating pests, plant diseases, and weeds have paid themselves off eight- to tenfold and more. Examples are given of the cost effectiveness of using pesticides, competently employed by properly educated agronomists. In this instance, pesticides are used in agriculture only after a preliminary investigation establishing the pest population and advisability of using chemicals, and by agreement with the plant conservation station. Examples are given of the contrasting results of improper use of pesticides and herbicides, administered without government intervention or by incompetent personnel. Emphasis is placed on the safe use of pesticides to avoid endangering livestock. Adoption of chemical methods has been discredited owing to incompetent use. Well-equipped conservation stations have been

set up in the republic during the Ninth Five-Year Plan. These include laboratories and seminar and conference rooms equipped with reference libraries and instrumentation. Brush-up and advanced courses are offered to agricultural specialists in the fall and winter. Seminars are given for workers as well. Last winter 155,000 workers attended seminars offered by specialists in various rayons. Every year agronomists in plant conservation attend a 5-day seminar held at the Ukrainian SSR Exhibition of Advanced Agricultural Know-How. ZASCHITA RASTENIY is not to be underestimated in its contribution to education in plant conservation. Other specialized literature is available as well. The role of the agronomist with a specialized education has become greater with the increased adoption of chemical methods in agriculture. Figures 3.

USSR

UDC 632.937.14./15

MICROBES - ANTAGONISTS AGAINST ROOT ROT OF TOBACCO

Moscow ZASHCHITA RASTENIY in Russian No 2, Feb 77 p 27

MAMEDOV, A. K., junior scientist, Azerbaydzhan Institute for Plant Protection, and PANTELEYEV, A. A., candidate of biological sciences

[Abstract] Root rot (caused by *Thielavia basicola*) causes very serious damage to tobacco in Azerbaydzhan, the Caucasus in general, the Ukraine, and along the Black Sea. During 1974-1975, a study was made of the effect of *Pseudomonas mycophaga* and *Trichoderma lignorum* bacteria on root rot infestation. Plants were washed for 15 minutes in a 1:100 solution of the microbe-antagonists. Under field conditions, the microbes reduced the incidence of the disease and increased yields. The best results were noted with the Kh-23 and D-1 strains of *Pseudomonas mycophaga*. The number of diseased plants was reduced from 44-55 (disease development intensity of 23-31%) to 6-8 (intensity 2-4%), and 12-14% (intensity 5-7%), respectively. The respective increases in yields were 4-5 and 3-4 quintals per hectare. In 1976 the Kh-23 strain was used in another experiment. The same solution was used and infestation was reduced from 40% (intensity of 19%) to 8% (intensity of 3%) and yields were increased by 3.6 quintals per hectare. In 1976 the experiment was expanded to 20 hectares, comparable figures were obtained and net income from the use of the microbe was 583 rubles per hectare.

USSR

SOILS OF THE KARABAKH EXPERIMENT STATION OF THE INSTITUTE OF GENETICS AND BREEDING, ACADEMY OF SCIENCES AZERBAIDZHAN SSR

Baku IZVESTIYA AKAD. NAUK AZERBAIDZHAN SSR, BIOLOGICHESKIYE NAUKI in Russian No 5, 1976 pp 40-44

BABAYEV, M. P.

[Abstract] The land occupied by the Kazabakh Experiment Station in Azerbaydzhan is divided into two main soil regions -- unirrigated (1500 ha) and irrigated (308 ha) - and the soils in each region are classified in terms of quality as best, good, average, low, and unsuitable for intensive farming on the basis of thickness of the fine-earth layer, extent of erosion, supply of nutrients, texture, stoniness, and other qualitative features. The soils in the unirrigated region are Cinnamon-Brown and Dark Chestnut (Gray-Cinnamon-Brown) while those in the irrigated region are Chestnut (Gray-Cinnamon-Brown) and Alluvial-Meadow. A map is presented, accompanied by a key to soil character. Figure 1; Table 1; No references.

USSR

UDC 632.931:633.11

DECOY PLANTING FOR THE CONTROL OF WHEAT PESTS

Moscow ZASHCHITA RASTENIY in Russian No 11, Nov 76 pp 18-19

KHARIN, S. A., doctor of agriculture sciences, professor, KRAVTSOV, A. A. and BONDARENKO, M. M., plant protection agronomists

[Abstract] In order to reduce the volume of chemicals required to protect plants against the rustic shoulder-knot moth, S. A. Kharin suggested in 1965 that spring wheat be planted very early and later sprayed to kill the caterpillars. By the spring of 1970, a great deal of positive information had been produced indicating the effectiveness of this method. In 1971-1973, the effectiveness of the decoy method was studied in Kustanay oblast. At "Diyevskiy" sovkhoz, decoy plantings were treated with 2.5% metaphos dust or 20% metaphos concentrate. These measures protected the main mass of the wheat from the moth while reducing the volume of chemicals required by a factor of 8-10 and saving over 10,000 rubles in all for the farm. Perennial grasses, which begin vegetation 40 days before the appearance of the wheat sprouts, can be used as decoy plantings for chemical control of the banded wheat flea beetle. Early, decoy plantings of wheat serve as a location for concentration of the flea beetle, wheat thrips and other pests, which then can be chemically eliminated, protecting the main crop which is planted later. However, the method cannot as yet be recommended for universal application, since during some years when spring is cold and late, the decoy

plantings do not serve their purpose. Strips of perennial grasses along roads through wheat fields may be more effective for this purpose, greatly reducing the amount of crop dusting required.

USSR

UDC 632.931:633.11

TUR INCREASES THE HARVEST

Moscow ZASHCHITA RASTENIY in Russian No 11, Nov 76 pp 20-21

MIL'NIKOV, A. M., Furmana Agricultural Administration

[Abstract] In 1972-1974, production experiments were undertaken at "Kommunar" kolkhoz to determine the influence of the preparation Tur (at a dose of 4 kg/ha) on winter wheat. When used together with nitrogen and a herbicide, Tur increased the harvest per hectare and disease resistance of the wheat, and made the plants easier and more rapid to harvest. Use of the preparation is to be expanded.

USSR

UDC 632.4:633.11

SPRING WHEAT ROOT ROT

Moscow ZASHCHITA RASTENIY in Russian No 11, Nov 76 p 47

LUKHMENEV, V. P., agronomist

[Abstract] The primary pathogen involved in root rot in the experiments performed by the author in 1969-1974 in Orenburg oblast was the fungus *Helminthosporium sativum*. Damaged stems were also found to contain *Fusarium* sp. and *Alternaria tenuis*. To protect wheat from the disease, the seeds are treated early (2 months before planting) then immediately before planting with Granosan (1.5 kg/t) and Phosphorbacterine (10 g per hectare norm of seeds). The greatest increase in harvest was achieved by combined treatment with both substances immediately before planting. Preplanting treatment with Vitawax decreased the development of the disease and increased the harvest, though to a lesser extent (1 cw/ha as opposed to 1.7 cw/ha). Simple heat treatment of the seeds (47 C, 2.5 hr) reduced the degree of damage by 5.9% and increased the harvest by 2 cw/ha. Mineral fertilizer used during plowing increased the harvest by 3.3 cw/ha (N₈₀P₈₀K₆₀). Double superphosphate (P₁₀) also decreased the development of the disease.

USSR

UDC 632.913.1

DECONTAMINATION OF CARS AND BAGS TO REMOVE POTATO NEMATODE CYSTS

Moscow ZASHCHITA RASTENIY in Russian No 11, Nov 76 p 52

MATVEYEVA, M. A., YAKUBOVICH, T. N., POPOVA, S. P. and ALEKSEYEV, L. A.

[Abstract] Potato nematode cysts are carried primarily by the soil, less frequently by the tubers. Best results in decontaminating rail cars and bags have been achieved by disinfection with a hot 2-3% solution of caustic soda and a clarified solution of calcium hypochlorite. 100% effectiveness was achieved for bags by 30 minutes' steam treatment at 110 C under pressure of 0.5-0.7 atm. It is noted that it is possible for the infection to be spread by the waste waters of potato treatment plants unless strict quarantine measures are observed.

USSR

NONCHEMICAL PREPARATIONS FOR THE PROTECTION OF CABBAGE

Moscow ZASHCHITA RASTENIY in Russian No 11, Nov 76 p 63

ROKTANEN, L. P. and BRAGINA, M. F.

[Abstract] The diamond-back moth is one of the most dangerous pests in Tselinograd oblast. In some farms, this pest reduces the harvest by up to 75%. Due to the danger of using pesticides on cabbage, the authors studied the possibility of using microbiological preparations against the caterpillar of the moth. It was found that entobacterine and boverine in a concentration of 1% (100 g per l of water) on the second day killed more than half of the caterpillars, on the 5th day -- all of them. The harvest was increased by 20-25%. The advantages of these preparations include their harmlessness for man, mammals, bees and other useful insects, as well as the possibility of their use throughout the entire period of vegetation. Stands of insecticidal plants were also tested, wormwood and potato tops being most effective, killing over 90% of the pests in 5 days.

CAPSULES FOR SPREADING TRICHOGRAMMAS

Moscow ZASHCHITA RASTENIY in Russian No 5(220), May 76 p 27

ZIL'BERT, L. P., Director, Ataki Biolaboratory, Ministry of Agriculture, MSSR, ABASHKIN, A. S., candidate of technical sciences, and ADASHKEVICH, B. P., candidate of biological sciences

[Abstract] Trichogrammas are ovicides used for pest control over 7.0 million hectares of farmland every year. Increasing demand calls for a fast mechanization of its manufacture and spreading. It is effective in both its pupa and imago stages. Pest eggs infected with it are now packaged in spherical or cylindrical capsules and mechanically spread from a tractor to the left and to the right. This procedure does not seem to affect the bioactivity of the parasite. This technique has already been used successfully in protecting cabbage with *Trichogramma evanescens* and corn with *Trichogramma euproctidis*. Figures 1; References, none.

USSR

UDC 615.384

STUDY OF BIOLOGICAL VALUE OF BLOOD SUBSTITUTE GEOSSEN

Kiev FIZIOLOGIYNIY ZHURNAL in Ukrainian Vol 23, No 2, Mar/Apr 77 signed to press 10 May 76 pp 241-246

BRYZGINA, T. M., Department of Immunology and Cytotoxic Sera, Institute of Physiology imeni A. A. Bogomolets, Academy of Sciences Ukr SSR, Kiev

[Text-English language abstract supplied by author] Aminoacid composition of the blood substitute geossen, nitrogen balance and nitrogen fractions of urine were studied in an experiment on rats under conditions of parenteral introduction of geossen against a background of protein starvation. Possibility of protein geossen decomposition by the organism proteolytic enzymes was investigated. Geossen contains all aminoacids characteristic for bone gelatin; it is decomposed by proteolytic enzymes of the gastroenteric tract, blood and muscle cathepsins; possesses definite biological importance favoring the decrease of protein deficit in the body which appears as a result of protein starvation. The investigations carried out permit the application of geossen to be recommended with the respective symptoms for maintenance of protein equilibrium in the body. Figures 4; Table 1; References 17: 13 Russian, 4 Western.

USSR

UDC 577.1.612.8.015.577.15/17.591.35

CHANGE IN SEROTONIN CONCENTRATION AND 5-HYDROXYTRYPTOPHAN DECARBOXYLASE ACTIVITY IN STRUCTURES OF THE VISUAL ANALYZER OF DOGS IN POSTNATAL ONTOGENY

Baku IZVESTIYA AKAD. NAUK AZERBAJDZHAN SSR, BIOLOGICHESKIYE NAUKI in Russian No 5, 1976 pp 67-72

KERIMOVA, N. K. and RZAYEV, N. A.

[Abstract] Fluorometric examination of various structures of the visual analyzer in newborn puppies showed the concentration of serotonin to be highest in the superior colliculus and corpus geniculatum laterale and lowest in the visual cortex (field 17). Total serotonin gradually increased in the first two structures up to day 21 of development and in the latter until the animals gained their sight (days 12 to 16 after birth), after which it decreased until it was lower than in newborn puppies. The decrease in the visual cortex serotonin was most pronounced when the animals were 1 year old. The dynamics of 5-hydroxytryphophan decarboxylase activity was closely related to that of the serotonin concentration, i.e., it was at a higher level at all ages in the superior colliculus and corpus geniculatum laterale than in the visual cortex. Figure 1; Tables 3; References 13: 8 Russian, 5 Western.

USSR

UDC 615.831.4.036.8

INVESTIGATION OF THE LONG-RANGE AFTEREFFECTS OF PROLONGED EXPOSURE TO LONG-WAVE ULTRAVIOLET RADIATION IN EXPERIMENTS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 2, 1977 pp 42-46

DANTSIG, N. M., PROKOPENKO, YU. I. and ZABALUYEVA, A. P., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] In connection with the widespread use of ultraviolet radiation for its germicidal action, the authors study the long-range aftereffects of long-wave ultraviolet in suberythematous doses with regard to the reproductive function in animals, the intensity of aging processes and the development of animals in subsequent generations. The experiments were done on four generations of mice with observations throughout their lifetime (about 15 months). It was found that the reproductive function and survival rate of fetuses were unaffected by exposure to ultraviolet. The number of mice that were stillborn and that died before the 21st day was four times lower in the irradiated group than in the control. The ratio of females to males surviving to the 28th day was higher for the group exposed to suberythematous doses than for either the control group or the heavily irradiated group. Indices characterizing rate of development were somewhat better for the mice exposed to suberythematous ultraviolet. The development of aging processes was retarded by 3/4 of the erythematous dose, and accelerated by 6 times the erythematous dose of long-wave ultraviolet radiation. Figures 2; Tables 2; References 9: 7 Russian, 2 Western.

USSR

UDC 612.74+612.467

FUNCTIONAL CHANGES IN SKELETAL MUSCLES DURING LOW FREQUENCY VIBRATION OF THE BLADDER

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian Vol 63, No 1, Jan 77 signed to press 4 Jun 76 pp 67-72

SHCHEZHIN, V. A., Department of Normal Physiology of Tyumen Medical Institute

[Abstract] The bladders of rabbits with intact central nervous systems were stimulated by an electrodynamic vibrator with a frequency of 7-15 hertz and an amplitude of 0.5-1.5 mm, and the electromyograms were analyzed. There was a rapid reduction in bioelectric activity in the thoracic section, while in the lumbar section an opposite effect was observed. Stimulating the bladder thus has a retarding effect on the reflexive interaction of these muscles. These diverse reactions involve the different roles of these muscles in movement and their distance from the stimulation site. It is concluded that

vibration stimulation of the bladder, initially causing an increased level of activity in the centers of the muscles stimulated, leads to a rapid inhibition. Figures 5; References 6 (Russian).

USSR

UDC (616.36:599.323.4)616-073.4-8

CONTENT OF NICOTINAMID NUCLEOTIDES IN INTACT AND REGENERATED RAT LIVER UNDER THE INFLUENCE OF ULTRASOUND

Minsk VESTSI AKADEMII NAVUK BSSR, SERYYA BIYALAGICHNYKH NAVUK in Belorussian No 1, 1977 pp 80-84

CHIRKIN, A. A., and ZHLOBA, A. F., Vitebsk Medical Institute

[Abstract] A modification of the fluorometric micromethod for the determination of nicotinamid nucleotides in liver tissue is described. Cystein and sodium sulphate are introduced into an extraction mixture. At the fermentation stage the phenazinemetasulphate-glucose-6-phosphatedehydrogenase reaction in the system is determined. It is shown that during the physiological growth and reparative regeneration of rat liver the content of NAD⁺, NADP⁺, and NADPH is reduced. The stimulation of the physiological regeneration of the intact liver by ultrasound is accompanied by a reduced level of NADPH. The more rapid regeneration of the liver under the influence of pulsating ultrasound in comparison to impulse ultrasound is accompanied by a very rapid normalization of NAD⁺ content. Tables 1; References 11: 6 Russian, 1 Polish, 1 German, 3 Western.

USSR

UDC 576.895.771:595.77

ON POLYTYPICAL SPECIES OF MOSQUITOES (CULICIDAE) II. *Aedes Caspius* (Pallas 1771)

Leningrad PARAZITOLOGIYA in Russian Vol 11, Issue 1, Jan/Feb 77 pp 48-51

GUTSEVICH, A. V., Zoological Institute, Academy of Sciences USSR, Leningrad

[Abstract] There have long been disputes over the morphological characteristics and geographic distribution of various subspecies of *Aedes Caspius* (Pallas 1771). An examination of specimens from the collection of the Zoological Institute of the USSR Academy of Sciences showed extensive variation in characteristics and coloration which could not be reduced to two basic forms. A table gives the basic characteristics of four forms. They are: 1) *Aedes caspius caspius*, located in the eastern regions up to West Siberia, in the steppe areas of the Ukraine, the Caucasus, Central Asia, and in Kazakhstan; 2) *Aedes caspius dorsalis*, located in forest zones up to the southern taiga, forest steppe, and distributed to East Siberia; 3) *Aedes caspius* "Far Eastern form" located along the Pacific Coast, Khabarovsk Krai, the Trans-Baykal; and 4) *Aedes caspius* "Pamir form" located in the Pamirs and in adjacent mountain regions of Central Asia. Attention was also directed to micromorphological characteristics. All studies, independent of the subspecies to which the specimen belonged, showed general characteristics differentiating these species from other species. *Aedes caspius* (Pallas) is the only polytypical species characterized by broad variations in systematic characteristics. Tables 2; References 17: 8 Russian, 1 Hungarian, 1 German, 1 Polish, 1 Czech (in German), 5 Western.

USSR

UDC 595.787:591.61

CONCERNING THE ATTRACTANT EFFECT OF DISPARLURE, A SEX PHEROMONE OF FEMALE GYPSY MOTHS *Porthetria dispar* (LEPIDOPTERA, ORGYIDAE) FOR MALE *Zanclognatha lunaris* (LEPIDOPTERA, NOCTUIDAE)

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 61, No 2, Feb 77 pp 309-310

MINYAYLO, V. A., KOVALEV, B. G., KIROV, YE. I. and MINYAYLO, A. K., All-Union Scientific Research Institute of Biological Methods of Plant Protection, Kishinev, Institute of Chemical Kinetics and Combustion, Siberian Department of the Academy of Sciences USSR, Novosibirsk, and Novosibirsk Agricultural Institute

[Abstract] Previous research has shown that disparlure (cis-7,8-epoxy-2-methyloctadecane), which is a sex pheromone of female gypsy moths, *Porthetria dispar*, also acts as an attractant for male *P. monacha* L. and *P. obfuscata* Walker. The authors of this paper report that the attractant is also effective for male *Zanclognatha lunaris* Scop. (Lepidoptera,

Noctuidae). The disparlure used contains 7% trans-isomer. Traps baited with the attractant were set out near Biysk in the Altayskiy Kray on 15 July 1974, and in 3 days 38 male *Z. lunaris* were caught. The distribution of the catch by traps with different amounts of disparlure shows that the insects were not caught accidentally. Only males were caught. No female moths were available to check the attractant effect on them, and the moth population of the vicinity was unknown, so that the effectiveness of disparlure for the male moths cannot be determined. It is concluded that the specificity of insect phromones is relative, and that pheromone communication between sexes is determined by a number of factors. Table 1; References 8: 2 Russian, 6 Western.

Environmental and Ecological Problems

YUGOSLAVIA

THE FATE OF PESTICIDES IN AQUATIC ENVIRONMENT. II. HYDROLYSIS OF DICHLORVOS IN A MODEL SYSTEM AND IN RIVER WATER

Zagreb ARHIV ZA HIGIJENU RADA I TOKSIKOLOGIJU in Serbo-Croatian Vol 27, No 4, 1976 signed to press 25 Jun 76 pp 297-305

DREVENKAR, V., FINK, K., STIPCEVIC, M., and TKALCEVIC, B., Institute for Medical Research and Occupational Health, Zagreb

[Abstract] Marked differences in the rate of dichlorvos hydrolysis were noted in two rivers, the Kupa and the Sava. The former had a higher rate than the latter. Experiments in a model system show that the rate of dichlorvos hydrolysis increases with the rise in alkalinity and in temperature, while the ion species can be of importance only if present in high concentrations. Yet when Kupa and Sava were tested, both alkalinity and temperature were almost identical and there were no marked chemical differences. This led to the belief that biological and bacteriological differences of the two rivers played an important part in self purification. This fact emphasizes the need for complete chemical, biological, and bacteriological analysis when systems such as river waters are being studied. Figures 5; Tables 2; References 6.

USSR

UDC 551.482.214:576.8

INFLUENCE OF ARTIFICIAL AERATION ON AUTO-PURIFICATION PROCESSES IN SETTLING PONDS OF A SUGAR REFINERY

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian Vol 13, No 1, Jan/Feb 77 signed to press 12 Aug 75 pp 28-35

RYABOV, A. K., SMIKUN, T. YA., PODGAYEVSKAYA, L. V., and ARYAMOVA, ZH. M., Institute of Hydrobiology, Academy of Sciences UkrSSR, Kiev

[Abstract] The work described in this report was necessitated by the fact that there are, in the Ukraine alone, 187 functioning sugar refineries which discharge significant amounts of effluent waters into the reservoirs. Studies were performed from March 1973 to April 1975 on two ponds of the Bobrovitsa sugar plant, (one of which (No 3) was aerated, the other (No 2), with the same degree of contamination served as control) and on the city pond of Bobrovitsa. Nos 2 and 3 are 2 ha in area, 3 m deep. Aeration was produced by bubbling air through disc aerators. The authors examined the dynamic variations in the basic chemical constituents of the water, and changes in the microflora produced by aeration. The aeration brought about a 2.5 fold rise in the rate of mineralization of nitrogen-containing organic compounds in the pond, as a consequence of which there was an improvement in the sanitary status and organoleptic qualities of the water. The artificial aeration inhibited development of bluegreen algae during the spring-summer period. Figures 10; Table 1; References 15: 7 Russian, 8 Western.

USSR

UDC 628.543.531.5:577.47

RESISTANCE OF BIOFILTER DETRITOPHATES UNDER PHENOL INTOXICATION

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian Vol 13, No 1, Jan/Feb 77 signed to press 12 Aug 75 pp 71-74

BOBROV, O. G., and SUDAKOVA, V. V., Scientific Research Institute of Chemistry and Technology of Polymers, Dzerzhinsk

[Abstract] When biofilters are used to purify industrial sewage, a large number of moth-flies--*Psychoda alternata* (Sav.) (Diptera)--and acaroid ticks--*Histiogaster* sp. and *Caloglyphus sphaerogaster* (Zachv.)--develop. These species of ticks also inhabit the malnourished sediment of the aeration tanks. Contamination of agricultural products and foods is traced to these pests, and the authors have examined the effectiveness of phenol compounds--salicylic acid (1000-1800 mg/l), and salicylic-carbolic acid (total concentration, respectively, 1800 and 1000, 1800 and 2000-5000 mg/l),--i.e., duplication of a typical sewage content from a salicylic acid plant,--to combat them. They found that it is feasible to use the highly-toxic phenol sewage as a mite and insect control measure to render harmless the sediments of biological purification plants. Tables 2; References 11: 10 Russian, 1 Western.

USSR

UDC 576.895.132:633.527.2 (470.63)

A COMPARISON OF THE NEMATODE FAUNA OF WINTER WHEAT AND WILD CEREALS FROM THE FOOTHILLS AND LOWLANDS OF DAGESTAN

Leningrad PARAZITOLOGIYA in Russian Vol 11, Issue 1, Jan/Feb 77 pp 29-33

RASULOV, SH. A., Dagestan State University imeni V. I. Lenin, Makhachkala

[Abstract] The study was conducted on the Kolkhoz imeni O. Batyraya in Sergokalinskiy Rayon, which has crop areas in both foothill and lowland zones of Dagestan. 117 species of nematodes were found, including 8 which had never before been found in the USSR, 27 which had never previously in the organs and rhizosphere of winter wheat, and 57 which were new for wild cereals. Two large tables give the species breakdown. There were no representatives of the subclass Adenophorea and very few from the order Tylenchida. The nematode fauna of the foothill region was richer than that of the lowlands. 82 species were found in wheat and 9 species in the wild cereals in the foothill zone, and for the lowland zone the figures were 51 and 63 respectively. The number of nematodes per 10 grams of soil in the foothill was 619 for wheat and 347 for wild cereals; in the lowlands the figures were 310 and 236 respectively. Temperature and moisture conditions are important reasons for this difference: They are as follows:

Factor	Foothills		Lowlands	
	Wheat soil	Wild cereal soil	Wheat soil	Wild cereal soil
Mositure (%)	23.4	27	9.4	8.4
Temperature (C)	17	17.5	21.8	22.7

The findings of Arpin (1969) indicated that nematodes from the genus Rhabditis almost disappear in dry areas and as a result their predator Mononchidae also declines. The present study confirms this. Tables 4; References 16: 7 Russian, 5 German, 4 Western.

USSR

UDC 576.895.775:599(476)

CHANGES IN THE SPECIES COMPOSITION AND NUMBER OF FLEAS IN THE NESTS OF SMALL MAMMALS DURING THE DRAINAGE OF MARSHES IN BELORUSSIA

Leningrad PARAZITOLOGIYA in Russian Vol 11, Issue 1, Jan/Feb 77 pp 43-47

CHIKILEVSKAYA, I. V., Section of Zoology and Parasitology, Academy of Sciences BSSR, Minsk

[Abstract] During 1960-1973, 9,34. fleas and larvae were collected from 576 nests of 7 species of rodents. The breakdown for the rodents was as follows:

Apodemus flavicollis Melch.--214 nests, *Ap. agrarius* Pall - 6, *Clethrionomys glareolus* Schreb.--229, *Microtus avarlis* Pall.--66, *Arvicola terrestris* L.--22, *Sciurus vulgaris* L.--29, *Ondrata zibethica* L.--10. The samples were taken from twelve localities in order to determine changes in composition induced by swamp drainage and the introduction of crops. 18 species of fleas were found. Of these 5 dominated: *Ctenophthalmus agyrtes* Hell., *Ct uncinates* Wagn., *Ct assimilis* Tasch., *Ceratophyllus turbidus* Roths., *C. sciurorum* Schrank accounted for 93.7% of the population. Of the 576 nests studied 248 (43%) had fleas. The field mouse (*Agricola agrarius*) was 83.3% infested, the ordinary field mouse 54.5%, and the squirrel 3.1% infested. The changes in species composition and total population are a result of changes in the species composition of hosts. The latter is affected by the declining amount of ground water resulting from drainage projects. In remote forest regions this has less impact. In undrained swamps the index of abundance was 6.3 during 1960-1962 and 1.0 in 1967-1973, while for drained swamps planted to crops the figures were 20.8 and 3.4 respectively. Tables and diagrams give information on species breakdown and variations in the 12 stations studied. Figures 1; Tables 2; References 8 (Russian).

USSR

UDC 632.937

THE SEARCH CONTINUES

Moscow ZASHCHITA RASTENIY in Russian No 11, Nov 76 pp 2-7

POPUSHOY, I. S., ADASHKEVICH, B. P., KOVALEV, B. G., SIKURA, A. I. and GRINBERG, A. M., All-Union Scientific Research Institute for Biological Methods

[Abstract] The Authors' Institute, created 5 years ago, has been working on the problem of the use of biological methods of plant protection in order to protect the environment. The Institute, in cooperation with the Moldavian Republic Plant Protection Station, is introducing such biological approaches as the use of *Trichogramma* against the cutworm and other pests, *Phytoseyulus* against ticks in protected soil, repellants against rodents in gardens, etc. Examples of the work of the Institute are discussed, including efforts to develop conditions for effective use of *Trichogramma*, mechanization of processes of distribution of useful organisms and their hosts and the use of entomophages. Work is continuing on the location, identification, evaluation of the biological activity and specificity of entomopathogenic microorganisms. Work is to be undertaken on the synthesis of attractants for the European corn borer, lesser apple worm and other tortricidae. In 1976-1980, it is planned to study the dynamics and metabolism of attractants and an analogue of the juvenile hormone of a number of environmental pests. Work is being completed on practical methods of the use of the attractant of the gypsy moth, lesser apple worm and leaf roller moth, as well as radiation sterilization of the spring cabbage fly. Performance of the tasks planned for the five-year plan period will require the creation of a peripheral network of affiliates and

supporting organizations in various agronomic and climatic zones of the USSR. Republic and oblast biological laboratories can be used to organize scientific and production laboratories to do the work of producing cultures of entomophages, testing, introduction and improvement of methods for biological control of pests.

USSR

TEN TREATMENTS REPLACED BY FOUR!

Moscow ZASHCHITA TASTENIY in Russian No 11, Nov 76 pp 14-15

AGAYEVA, Z. M., Azerbaijan Station, All-Union Institute for Plant Protection, and KAMILOV, A. V. and BABAYEVA, B. KH., junior scientific workers

[Abstract] Cotton is the leading crop of Azerbaijan. Growing of cotton requires nine to eleven treatments with pesticides, which is still not always successful in preventing massive multiplication of the cotton bollworm, while involving significant pollution of the environment. Recent experiments have shown that this massive treatment is unnecessary if the pesticides are applied at the proper time in the life cycle of the bollworm for maximum effectiveness. Reducing the number of applications from 12 to 2-4, applied at the proper time, not only reduces pesticide expenditures and therefore also pollution, but also allows natural enemies of the bollworm to develop, thus increasing the natural biological control of this pest.

USSR

UDC 576.858.25.095.1(729.1)

SOME ECOLOGICAL CHARACTERISTICS OF EASTERN EQUINE ENCEPHALOMYELITIS VIRUS
IN CUBA

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 signed to press 19 Apr 76
pp 62-69

BEREZIN, V. V., Institute of Poliomyelitis and Viral Encephalitides, Academy
of Medical Sciences USSR, Moscow

[Abstract] The first significant epizootic of eastern equine encephalomyelitis in Cuba was recorded in 1953 when almost 25,000 horses and 50 persons died. Other outbreaks occurred in 1962, 1969, 1970, and 1972. Serological and virological studies of natural foci of EEE virus by the author in 1972-1973 showed that EEE is endemic in most of the island. Fifteen virus strains were isolated from 8 bird species and some reptiles. As in other foci of EEE virus in the Western Hemisphere, the pathogen circulates via the bird--mosquito (chiefly *Ae. taeniorhynchus*)--bird scheme. There are at least two types of EEE foci: (i) forest where the main hosts of the causative agent are Cuculiformes and Passeriformes and (ii) water-littoral (freshwater lakes and bogs, mangrove forests) where the main reservoirs of the infection are Ciconiiformes and Pelicaniformes. There may be a third or island type associated with colonies of white gannets, frigate birds, and gulls. The main migration routes of birds that nest in North America and winter in South America pass over Cuba and during the spring and fall migrations there is undoubtedly considerable dissemination and exchange of causative agents between the transient and aboriginal fauna. Tables 2; References 6 (Western).

HUNGARY

ENDOTOXIN-INDUCED NON-SPECIFIC RESISTANCE IN RATS EXAMINED BY TRYPANOSOMA EQUIPERDUM CHALLENGE

Budapest ACTA MICROBIOLOGICA in English Vol 23, No 5, 1976 signed to press
7 Oct 75 pp 271-276

FORIS, Gabriella, National Institute of Pharmacy, Budapest

[Text-English language abstract supplied by author] In rats weighing 100 g, intravenously administered Trypanosoma equiperdum organisms started logarithmic growth immediately, where in rats weighing 150-300 g growth started after a lag phase of 0.7-3.1 hr. The lag phase lasted for 15-17 hr when the rats were pretreated serially with endotoxin and this time course was not modified by changes either in the host's body weight or in the germ count of the inocula. Maximum resistance to infection was achieved with gradual doses of the endotoxin given at 48 hr intervals on 6 occasions. The total dose of endotoxin was fourfold of its LD₅₀. Additional doses failed further to increase the resistance. Serial passages of the strain in rats pretreated with endotoxin disclosed that the trypanosomes growing after the lag phase had developed resistance to the factor responsible for the lag phase. Thus the method does not allow a quantitative estimation of resistance induced by serial endotoxin treatment, yet it represents a rapid and simple procedure in every case in which qualitative assessment is sufficient. Table 4; References 17.

HUNGARY

LEUKOCYTE MIGRATION INHIBITION BY A SPECIFIC ANTIGEN IN HUMAN TYPHOID FEVER

Budapest ACTA MICROBIOLOGICA in English Vol 23, No 5, 1976 signed to press
10 Jan 76 pp 293-297

NYERGES, G*, SZERDAHELYI, F.**, TANKO, SZ.**, BOGNAR, SZ.*, and FUNK, Olga*, Central Municipal Hospital for Infectious Diseases*, Budapest, and Section for Infectious Diseases**, Eger

[Text-English language abstract supplied by authors] Cellular reactivity to heat-killed Salmonella typhi antigen was investigated by the leukocyte migration inhibition (LMI) method in 33 S. typhi infected patients and in 32 control persons. In the typhoid group a statistically significant LMI was observed as compared to the members of the control group. A correlation was found between the level of the cellular sensitivity and the time elapsed between onset of the disease and performance of the test. Previous typhoid vaccination had no influence on the LMI. No correlation was found between the agglutinin titres and the sensitivity demonstrated by the LMI test. The value of the method in studies of cellular immunity in typhoid fever is discussed. Figures 2; Tables 4; References 5 (Russian).

USSR

UDC 615.371(047)

DEVELOPMENT OF VACCINE SAFETY CRITERIA FROM THE ASPECT OF IMMUNOPATHOLOGY
OF INFECTIOUS DISEASES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2,
1977 signed to press 17 May 76 pp 3-7

SEMENOV, B. F., Institute of Poliomyelitis and Viral Encephalitis, Academy
of Medical Sciences USSR, Moscow

[Abstract] Specific vaccine prophylaxis in the 20th century has resulted
in significant reductions in morbidity due to numerous infections, especially
diphtheria, whooping cough, tetanus, poliomyelitis, measles, smallpox, etc.
However, in spite of these achievements a whole series of new problems have
arisen including that of remote postvaccinal complications under conditions
of mass, repeated, and long-term immunization. One approach to solving this
problem is to study the mechanisms of injuries due to vaccines from the
viewpoint of immunopathology. Solution to the problem posed here will require
the creation of adequate laboratory facilities and investigation of the
immunological safety of all available vaccines as well as of future ones.
Table 1; References 33: 14 Russian, 19 Western.

USSR

UDC 616.981.49-092.9-092:612.017.1:577.2

IMMUNITY TO EXPERIMENTAL SALMONELLOSIS INFECTION AND THE MOLECULAR-WEIGHT
HETEROGENEITY OF THE S. TYPHIMURIUM ANTIGENIC COMPLEXES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2,
1977 signed to press 28 May 76 pp 79-85

SEVERTSOVA, M. K. and STANISLAVSKIY, YE. S., Moscow Institute of Vaccines
and Serums imeni Mechnikov

[Abstract] The authors study the role of components of the S. typhimurium
antigenic complex, that differ in molecular weight and chemical composition,
in the formation of antiinfection immunity against experimental salmonellosis
in mice. The material for the investigation was obtained by fractionation
of the antigenic complex (water extract of an acetone culture of S. typhimurium
No 78) by the method of ultrafiltration on the unit "Amikon" and gel-chroma-
tography on Sephadex G-200 and sepharose 2B. The authors demonstrate that
the protective activity is due both to the high polymer components (molecular
weight 2 million and more) and to the fragments with a relatively low molecular
weight (15,000-20,000). Here, up to 60-70% of the animals were found to be
protected from death after infection (control subjects no more than 30%) and
the duration of their life comprised 17-18 days (versus 9-13 days in the
control subjects). The preparations, which have similar protective ability,
differed widely in chemical composition. The obtained data demonstrated

the main differences in the degree of participation of the components with different molecular weight in the formation of antiinfection and antiendotoxic immunity. Figures 3; Tables 3; References 12: 9 Russian, 3 Western.

USSR

UDC 615.372:576.851.555].015.46:616.15-097.34-078.7

ON THE USE OF THE REACTION OF PASSIVE HEMAGGLUTINATION FOR THE PURPOSE OF DETERMINING THE LEVEL OF ANTIBODIES DURING IMMUNIZATION OF ANIMALS WITH CL. PERFRINGENS ANATOXIN

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian
No 2, 1977 signed to press 16 Feb 76 pp 85-88

SHEMANOVA, G. F., DMITRIYEVA, L. N., VLASOVA, YE. V., PANTELEYEV, E. I., MOSHIASHVILI, I. YA. and GORBACHEVA, L. D., Moscow Scientific Research Institute of Vaccines and Serums imeni Mechnikov and the Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR

[Abstract] The authors present data on studying the possibility of using the reaction of passive hemagglutination for the purpose of titrating blood serums of mice, guinea pigs and rabbits, immunized with Cl. perfringens anatoxin. In the reaction the authors used a diagnostic agent obtained by sensitization of formalin and tannin-treated sheep erythrocytes with serologically pure Cl. perfringens anatoxin, and homologous serums as the standard. A high immune response to the reaction was observed in mice thus suggesting that inbred mice might be used as a model for immunological and immunogenetic research involving the Cl. perfringens anatoxin. Figure 1; References 3 (Western).

USSR

UDC 615.37:608.3(104)

ANALYSIS OF THE PRACTICE OF PATENT PROTECTION FOR VACCINE-SERUM PREPARATIONS IN CERTAIN FOREIGN COUNTRIES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian
No 2, 1977 signed to press 19 Mar 76 pp 94-100

SHEPELEV, N. P., DZAGUROV, S. G. and KOROVKIN, V. I., All-Union Scientific Research Institute of State Patent Expertise, State Scientific Research Institute of Standardization and Monitoring of Biological Medical Preparations imeni Tarasevich

[Abstract] On the basis of a 700-document study the authors discuss patent practices in the USA, England, France and partially in Italy, associated

with protective vaccine-serum preparations. There is no significant difference in approach in the USA, England and France. In the majority of cases, the sphere of protection includes heterogenic objects associated with the process of producing the preparation. For immediate protection of the preparation, the qualitative composition appears to be the main indicator and the use of a certain microorganism to a lesser degree. Of the total number of documents defending the discussed objects, approximately 10% directly protect the preparation. Tables 4.

USSR

UDC 615.371:576.851.49.095.57].015.46

REACTOGENICITY AND IMMUNOLOGICAL ACTIVITY OF LIVE ENTERAL DYSENTERY SONNE VACCINE FROM A SPONTANEOUS MUTANT

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian
No 2, 1977 signed to press 12 Apr 76 pp 111-117

BELAYA, YU. A., PAVLOVA, L. I., SUKHAREVA, M. YE., KUZ'MIN, S. N., TELESHEVSKAYA, E. A., VOLKOVA, I. F., TSEPORINA, M. B. and KAZACHKOVA, YE. L., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, State Institute of Control and Standardization of Medical Biological Preparations imeni Tarasevich, Moscow Urban Sanitary Epidemiology Station and Sanitary Epidemiology Station of the Dzerzhinsk Rayon of Moscow

[Abstract] Live dysentery Sonne vaccine from a spontaneous mutant for peroral immunization of children aged 7-13 years in doses of 3-25 billion live microbe cells using single and triple immunization was found to be practically areactogenic and specifically safe. Weak reactions were noted in the gastrointestinal tract with the same frequency (1.7%) in a group of children immunized with the vaccine, and in the control group receiving a placebo (2.2%). The authors established a prolonged (more than 10 days in 32% of the children) emission of the vaccine strain from the intestine of those vaccinated. They demonstrated a substantial increase in the serum of the immunized individual of the level of specific hemagglutinins as well as IgA and IgM antibodies in 82% of those vaccinated and retention at a high level for a period of 2 months. The appearance in high titres of IgA antibodies in the serum of those perorally vaccinated indicates a well-expressed local and general immunological activity of the live dysentery Sonne vaccine from a spontaneous mutant, which possesses the ability to survive for a prolonged period of time in the intestines of children. Tables 2; References 26: 15 Russian, 11 Western.

USSR

UDC 576.851.49(SALMONELLA).097.22:615.334(FUSIDINUM)

MAPPING THE FUSIDIN ANTIBIOTIC RESISTANCE MARKER IN SALMONELLA TYPHIMURIUM
AND STUDY OF THE TRANSDUCTANTS' PROPERTIES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2,
1977 signed to press 25 Nov 75 pp 117-120

GAMELEYA, N. B. and LEVASHEV, V. S., Second Moscow Medical Institute imeni
Pirogov

[Abstract] The fusidin antibiotic resistance marker in *S. typhimurium* is
contransduced in 95% of the cases using the P 22 phage with the streptomycin
resistance marker. Transmission of the fusidin resistance gene causes no
substantial changes in the transductants' properties (morphology, antigenic
structure, rate of growth, biochemical activity, sensitivity to other anti-
biotics). The fusidin resistant mutants and transductants studied revealed
a significant reduction in virulence for white mice. However this rate of
decrease does not correspond to the degree of onset of the transductants'
resistance. Virulent variations are also possible. Tables 2; References 7:
2 Russian, 5 Western.

USSR

UDC 619.616.9.993.1

(54) A METHOD FOR OBTAINING A TOXOPLASMIC ANTIGEN

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI
in Russian No 40, 1976 p 12, (11) 533376 (21) 1966651/30-15 (22) 31.08.73
2(51) A 61 B 10/00

(72) OMAROV, ZH. K., BOROVNIKOV, A. A. and KRASOV, V. M. (71) Scientific
Research Veterinary Institute and Institute of Zoology AS, Kazakh SSR

[Text] A method for obtaining a toxoplasmic antigen for serological
diagnostics, including extraction and washing off of toxoplasms from
cellular components of the initial raw material, disintegration of toxo-
plasms by ultrasound treatment and isolation of the antigen fraction by
isoionic fractionation, distinguished by the fact that with the aim of
increasing the specific antigen activity, ultrasonic disintegration of
the toxoplasm cells is conducted twice and three times, with separation of
the lysate of the toxoplasm coatings and isolation of the antigen fraction
from it by isoionic fractionation during supplementary action by ultrasound
upon the lysate with succeeding purification of the antigen fraction from
nonspecific ballast substances by the addition of an antiserum to it.

USSR

UDC 615.371:576.858.13

STUDIES ON TISSUE CULTURE SMALLPOX VACCINE PRODUCED BY THE MOSCOW
SCIENTIFIC RESEARCH INSTITUTE OF VIRAL PREPARATIONS

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 pp 71-75

CHERNOS, V. I., UNANOV, S. S., ANTONOVA, T. P., NEMTSOV, I. M.,
ANDZHAPARIDZE, O. G., KAMENSKIY, V. A., KHARIKOVA, A. A., and ROMANENKO,
T. V., Moscow Scientific Research Institute of Viral Preparations, Ministry
of Health USSR, Moscow

[Abstract] The LIVP strain of smallpox vaccine virus was produced in the authors' institute by adapting the Elstry strain to calf skin. Studies showed it to be stable in storage, free from bacterial contamination, lacking in serum proteins, and suitable for intradermal injection by jet injector. Virus for the tissue vaccine was grown in Japanese quail embryo culture controlled for the absence of contaminating viruses. Tests on animals revealed that the vaccine is highly antigenic and produces insignificant side effects. When given by jet injector to individuals 20 to 50 years old who had been revaccinated no less than 5 or more than 10 years previously, it proved to be superior to the standard dermal vaccine in the same doses. The geometric mean titer of virus-neutralizing antibodies after vaccination with the tissue and dermal preparations was 1:256 and 1:158, respectively. Tables 4; References 15: 5 Russian, 10 Western.

USSR

UDC 615.371:576.858.51].036.07

STUDIES ON LIVE MUMPS VACCINE FROM THE L-3 STRAIN PRODUCED BY THE MOSCOW
SCIENTIFIC RESEARCH INSTITUTE OF VIRAL PREPARATIONS. SIDE EFFECTS AND
ANTIGENIC PROPERTIES OF THE VACCINE

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 signed to press 4 Mar 76
pp 54-58

UNANOV, S. S., BOCHKOV, R. A., ALEKSEYEVA, A. K., KAPTSOVA, T. I., LEVCHENKO,
YE. N., AKOPOVA, I. I., KAMENSKIY, V. A., SHARIPOVA, L. F., ROMANENKO, T. V.,
and YERMAKOVA, M. N., Moscow Scientific Research Institute of Viral Preparations,
Ministry of Health USSR

[Abstract] Live mumps vaccine prepared from the L-3 strain by the authors' institute produced a pronounced antigenic effect in 591 children 1 to 12 years of age whether inoculated by syringe or jet injector. The antibody level over a period of 5 years varied from 4.2 to 5.5 log₂. A mild elevation of temperature and inflammatory phenomena occurred in only a few children, and none suffered local side effects. Tables 5; References 3 (Russian).

STUDIES ON LIVE MUMPS VACCINE FROM THE L-3 STRAIN PRODUCED BY THE MOSCOW
INSTITUTE OF VIRAL PREPARATIONS. EPIDEMIOLOGICAL EFFECTIVENESS OF THE
VACCINE

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 pp 59-61

UNANOV, S. S., BOCHKOV, R. A., ALEKSEYEVA, A. K., KAPITSOVA, T. I., LEVCHENKO,
YE. N., AKOPOVA, I. I., KAMENSKIY, V. A., SHARIPOVA, L. F., ROMANENKO, T. V.,
and YERMAKOVA, M. N., Moscow Institute of Viral Preparations, Ministry of
Health USSR

[Abstract] A total of 57,701 children age 1 to 12 years in the city of Voronezh were vaccinated over a period of 3 years with live mumps vaccine from the L-3 strain produced by the authors' institute; 62,266 children served as controls. Analysis of the results revealed an incidence of the disease among the vaccinates about 30 times lower than among the controls: 1.09 versus 32.38 per 1000 children. Emergency vaccination of children from 10 different institutions where outbreaks of mumps had occurred halted them within 30 days. It also substantially shortened the duration of the quarantine period. As a result of the vaccination campaign, the incidence of mumps in Voronezh declined steadily and instead of the expected rise in 1973, the incidence declined to 96.6 per 100,000 population, i.e., it was 6.9 times lower than the mean annual rate for the preceding 10 years.

Industrial Toxicology

YUGOSLAVIA

OCCUPATIONAL EXPOSURE TO CARBON MONOXIDE IN A CONVERTER TYPE STEEL MILL

Zagreb ARCHIVES OF INDUSTRIAL HYGIENE AND TOXIOLOGY in Serbo-Croatian Vol 27, No 4, 1976 signed to press 7 Mar 76 pp 307-311

BAUER, S., CHIPEVSKI, V. and GREKOVSKI, K., Institute of Occupational Medicine, Health Center, Skopje

[Abstract] During steel processing large amounts of carbon monoxide are found within the work area of the mill. In order to determine these amounts, 424 separate measurements were taken between the years 1968-1973. The results show that, out of the 424 readings, 89.9 percent of the average amounts of carbon monoxide present in the atmosphere are within the limits of the maximum allowable amounts which is 50 ppm by Yugoslav standards. At the same time blood carbon monoxide level of 375 workers was tested; 211 were non smokers. The obtained readings were compared to those of the control group of 150 workers not exposed to carbon monoxide, 70 of whom were non smokers. The amounts of carbon monoxide found in blood of the exposed workers were higher than in the control group. The average reading of carbon monoxide in the control group among non smokers was 0.18 ml/100 ml blood, while among exposed nonsmokers it was between 0.26 ml and 0.38 ml. Also among control group smokers 0.61 ml versus 0.63 ml to 0.80 ml among exposed smokers. It was also noticed that there was significant increase in blood carbon monoxide concentration in the exposed group of non smokers in 1969, 1971, and 1972 and in smokers in 1971. Tables 4; References 3.

YUGOSLAVIA

PROBLEM AND SYMPTOMS OF ADDICTION RELATED TO EXPOSURE TO TRICHLORETHYLENE

Zagreb ARCHIVES OF INDUSTRIAL HYGIENE AND TOXICOLOGY in Serbo-Croatian Vol 27, No 4, 1976 signed to press 30 Oct 75 pp 313-320

MONASIEV, E., and ILIEV, N., Institute for Occupational Medicine, Health Center, Skopje

[Abstract] There is definite correlation between length of exposure to trichlorethylene and dependence on it. The lengthier (in years of exposure) the higher the dependence although no abuse of it has been noticed so far. Employees at a dry cleaning plant which uses trichlorethylene were examined for effects of trichlorethylene inhalation. The urine specimen showed presence of elevated amounts of trichloroacetic acid in all individuals, and indication of high exposure. The most common symptoms were lightheadedness and signs of euphoria. Removal from this environment caused nervousness, insomnia, and even tremors. The mode of action of trichlorethylene is still not clear and should be further researched. Tables 3; References 6.

YUGOSLAVIA

EFFECT OF PESTICIDES ON EYE AND VISION

Zagreb ARCHIVES OF INDUSTRIAL HYGIENE AND TOXICOLOGY in Serbo-Croatian
Vol 27, No 4, 1976 signed to press 28 May 76 pp 321-333

PLESTINA, R., and PIUKOVIC-PLESTINA, M., Institute for Medical Research and Occupational Medicine in Zagreb, and the Eye Clinic at the Medical Faculty of the University of Zagreb

[Abstract] The acute effects of pesticides on the human body, and the eye in particular, have been thoroughly studied. Japan shows the highest rate of acute poisonings as they use the highest amounts of pesticides per area. However, there is lack of information in cases of prolonged exposure to pesticides although the Japanese have noted impairment of vision by symptoms which they have named Saku disease. Certain cholinesterase inhibitor miotics used in the treatment of glaucoma are identical chemically with some pesticides; yet because the toxic levels are so close to the therapeutic levels, use of these drugs is declining. Such are the trialkyl esters of phosphoric acid or esters of carbamic acid. According to many studies, narrowing of the peripheral visual field is the most frequent symptom found in prolonged exposure to pesticides. However, few studies have determined the duration of exposure and the type of pesticide. The experiments on animals made possible the study of the effects of particular compounds; however, the mode of action is still unknown and the morphological findings and electrophysiological changes are non-specific. Therefore, neither the various findings in exposed individuals nor the experiments with laboratory animals can conclusively prove that the changes in the eye are caused exclusively by the pesticides although there are strong indications to that effect. Table 1; References 67.

USSR

UDC 632.95.024.391

THE USE OF BACTERIAL INSECTICIDES REQUIRES CAUTION

Moscow ZASHCHITA RASTENIY in Russian No 6(220), May 76 pp 36-37

MURZA, V. I., Junior Scientist, All-Union Scientific-Research Institute of Toxicology

[Abstract] With the wider use of entobacteria, dendrobacilli, bitoxibacilli, Insectin, and other preparates containing essentially *Bacillus turgeniensis* and products of its bioactivity, it becomes ever more important to protect laboratory and factory personnel against infectious, allergenic, or non-specific pathogenic effects. Amounts in excess of 5-10 g/kg in the stomach have caused death of laboratory animals. Inhalation of air containing about 217 mg/m³ for a few hours a day over a period of several months has resulted in respiratory difficulties and damage to the lungs. Proper medical examination and first aid, individual precautions, and environmental precautions are required for both producers and users of these insecticides. Eyes, nose, mouth, and skin ought to be protected as they would be against any nontoxic but hazardous dust. Careful washing of food products with warm water is also strongly recommended.

USSR

UDC 614.78:711.644

HYGIENIC STANDARDIZATION OF THE DENSITY OF NEW CONSTRUCTION IN THE RESIDENTIAL AREA OF CITIES

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 2, 1977 pp 50-56

GUBERNSKIY, YU. D. and DMITRIYEV, M. T., Institute of General and Communal Hygiene imeni A. N. Sytin, Academy of Medical Sciences USSR, Moscow

[Russian abstract provided by the source]

[Text] Because of human activity, various everyday operations, saturation of modern structures with different building and finishing polymer materials that are subject to deterioration, and the operation of ventilating equipment, etc., buildings emanate a whole complex of toxic substances that have a decided effect on the environment. It has been established that modern residences are a source of environmental contamination with ammonia, dimethylamine, hydrogen sulfide, nitrogen oxides, carbon monoxide, benzene, toluene, xylene, propylamine, methanol, acetate and thiophene. Emissions of anthropotoxins are approximately 30 times higher per person for the man-building system than for an isolated man. The total emissions of a modern 16-story apartment building are equal to 31% of the emissions from an operating automobile. One important way to optimize the air in the dwelling is to replace gas ranges by electric ranges; this step alone would reduce toxic emissions

by 27%. The toxicity of emissions could be reduced considerably by improving waste disposal facilities. Problems of cleaning up gas emissions of buildings and purification of inflowing city air have a workable outlook for public buildings equipped with air conditioning systems. Quantitative relations found between population density, the concentration of new construction starts and air pollution by residential buildings show that standardized population densities decrease with increasing concentration of new construction. For modern 16-story buildings, the optimum density of construction starts in the smallest subdivision [mikrorayon] is 12.5%. The standardized densities of construction starts decrease with increasing height of buildings. Figures 2; Table 1; References 5 (Russian).

USSR

UDC 613.6:[669.36:621.791

HYGIENIC EVALUATION OF COPPER WELDING

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 2, 1977 pp 34-42

VORONTSOVA, YE. I. and PRYADILOVA, N. V., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

[Russian abstract provided by the source]

[Text] A study was done on labor conditions that prevail where different methods are used for arc welding and cutting copper. The main occupational hazard involved in these methods of metal-working is the finely dispersed aerosol with makeup determined by the composition of the welding materials. Acute and chronic experiments on animals using physiological, biochemical and morphological methods show the pathogenic action of the aerosol that forms when copper is being welded. To prevent the adverse effect of cupric oxide welding aerosol on the body of the worker, the authors propose technological, sanitation engineering and preventive medical procedures. References 24: 20 Russian, 4 Western.

USSR

UDC 275.247:581.6

(54) A METHOD FOR DETERMINING THE MUTAGENIC, CARCINOGENIC, AND TERATOGENIC EFFECT OF CHEMICAL COMPOUNDS IN THE AIR

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 40, 1976 p 8, (11) 533361 (21) 2168876/30-15 (22) 01.09.75 (2(51) A 01 H 1/00; A 01 G 7/00

(72) NIKIFOROV, YU. L. and RUGUZOV, I. A., (71) State Order of the Labor Red Banner Nikitskiy Botanical Garden

[Text] 1. A method for determining the mutagenic, carcinogenic, and teratogenic effect of chemical compounds in the air, which includes the action of the enumerated compounds upon the organism and determination of the reaction of the indicator cells, distinguished by the fact that with the aim of more rapid conduct of the analysis, gametophytic-generation cells of coniferous perennials are used as the indicator. 2. A method according to paragraph 1, distinguished by the fact that cells of the male sexual generation of the same conifers are taken as the indicator.

USSR

UDC 66.074.3

(54) A COMPOSITION FOR THE PURIFICATION OF GASES, FOR EXAMPLE ACETYLENE, FROM PHOSPHINE

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 16, (11) 535096 (21) 2182825/23-26 (22) 22.10.75 2(15) B 01 D 53/02; C 10 H 23/00

(72) DORFMAN, YA. A., ROGOZA, Z. I. and ZHARKOVA, S. V. (71) Institute of Organic Catalysis and Electrochemistry, AS Kazakh SSR

[Text] A composition for the purification of gases, for example acetylene, from phosphine, containing a salt of bivalent copper, infusorial earth, and water, distinguished by the fact that with the aim of increasing the degree of purification, decreasing the time of its regeneration, and eliminating the toxicity, as the salt of bivalent copper it contains copper chloride and the components are taken according to the following ratio, percent by weight:

Copper chloride	12-18
Infusorial earth	60-70
Water	The remainder

USSR

UDC 615.475

(54) AN INHALATION ANESTHESIA APPARATUS

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 40, 1976 p 13 (11) 533381 (21) 2189228/23-13 (22) 14.11.75 2(51) A 61 M 17/00

(72) BERLIN, A. Z. and KOTRAS, R. L. (71) All-Union Scientific Research Institute of Medical Instrument Manufacture

[Text] An inhalation anesthesia apparatus, containing an evaporator, a dosimeter, a breathing bag, a switching faucet, distinguished by the fact that with the aim of providing for adequacy of anesthesia depth during spontaneous breathing according to any respiration sequence, it is provided with an anesthesia-depth controller, made in the form of an adjustable choke bypassing the evaporator, with a scale graduated according to the rate of entry and the depth of the anesthesia, and a fan connected in series with the evaporator.

USSR

UDC 615.471:616.12-008.31

(54) AN ASYNCHRONOUS IMPLANTABLE ELECTROCARDIOSTIMULATOR

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 40, 1976 p 13 (11) 533383 (21) 1968589/28-13 (22) 03.08.73 2(51) A 61 N 1/36

(72) BEL'GOV, V. YE., ZAYTSEV, A. K. and PANTSYRNYY, V. B.

[Text] An asynchronous implantable electrocardiostimulator, containing a power pack, a pulse oscillator, an RC circuit, and a controllable key made, for example, in the form of a transistor connected according to a circuit with a common emitter, the base of which is connected to the pulse oscillator output, and electrodes, distinguished by the fact that with the aim of simplifying the arrangement when raising the level of protection against electrochemical erosion and increasing the amplitude of the output pulse, the RC-circuit components in it are series-connected, the resistor being connected to the positive power-pack bus, and the capacitor--to the negative common power-pack bus, the load across the electrodes being applied between the midpoint of the RC circuit and the transistor collector. Figure 1.

USSR

UDC 612.014.424:621.382

(54) AN IMPLANTABLE CARDIOSTIMULATOR

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 40, 1976 p 12 (11) 533375 (21) 1873999/28-13 (22) 19.01.73 2 (51) A 61 B 5/04

(72) ZARIDZE, Z. V. and BREDIKIS, YU. I. (71) Institute of Experimental and Clinical Surgery and the Kaunas Medical Institute of the Ministry of Health Georgian SSR

[Text] An implantable cardiostimulator, containing a master pulse oscillator, the output of which through the current stabilizer and the doubling circuit is connected to the first tap of the dosing capacitor, distinguished by fact that with the aim of excluding passage of the current through the stimulated object when components of the circuit break down, the second tap of the capacitor is connected via the diode to the common bus and is connected to the emitter of a transistor, including according to a circuit with a common base, connected by the collector to the common bus via the stimulated object. Figures 1.

USSR

UDC 634.0.863.004.68:608.1

ORGANIZATION OF WORK OF INVENTORS AND RATIONALIZERS AT THE ANDIZHAN HYDROLYSIS PLANT

Moscow GIDROLIZNAYA I LESOKHIMICHESKIAYA PROMYSHLENNOST' in Russian No 2, 1976 p 29

LARSHIN, V. A., chief engineer, Andizhan Hydrolysis Plant

[Abstract] The branch of VOIR (All-Union Society of Inventors and Rationalizers) at the Andizhan Hydrolysis Plant includes 114 plant workers and is headed by a council of 11 members. An established procedure for dealing with proposals is strictly observed at the plant. In 1974, 53 proposals were presented and 37 were introduced, including one invention. Competitions are conducted periodically for "Best rationalizer of the plant" and "Best creative collective."

USSR

UDC 613.358.02:633.511

(54) A HOPPER

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 4 (11) 535047 (21) 1967778/30-15 (22) 22.10.73 2(51) A 01 D 45/18

(72) BESSONOV, A. P., D'YAKONOV, L. N., and ALIMUKHAMEDOV, SH. P.

[Text] A hopper, predominantly of a cotton-harvesting machine, containing a bottom, walls, a lid, a hopper-tipping mechanism produced in the form of a hydraulic cylinder, the shaft of which is coupled to a crossarm pin rigidly fastened on the hopper, distinguished by the fact that, with the aim of providing for more complete unloading by transmitting oscillations to the hopper in an overturned position, the shaft is coupled to the crossarm pin via an elastic component, for example, a spiral spring.

USSR

UDC 638.141.3:638.147.21

(54) A SMOKE GENERATOR

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 7 (11) 535058 (21) 2029897/30-15 (22) 12.05.74 2(51) A 01 K 47/06

(72) DANIYELIAN, S. G., MARKOSYAN, A. A., NALBANDYAN, K. M. and AKOPYAN, N. M.

[Text] A smoke generator, including a housing with a combustion chamber, a bellows, and a lid with a flue, distinguished by the fact that with the aim of more uniform combustion of phenothiazine powder and elimination of the leakage of medicinal smoke, the combustion chamber is produced in the form of an enclosed container provided with two outlets, one of which is connected to the bellows, and the other - to the flue. Figures 1.

USSR

UDC 664.8.036.543

(54) A METHOD OF TESTING STERILIZATION REGIMES OF PACKAGED FOOD PRODUCTS

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 10, (11) 535072 (21) 2072942/28-13 (22) 04.11.74 2(51) A 23 L 3/00

(72) MALKINA, Z. M., PROKHOROVICH, L. YE., KAMENSHCHIK, YA. I. and BEREGOV, N. M. (71) Moldavian Scientific Research Institute of the Food Industry

[Text] A method of testing sterilization regimes of packaged food products, which provides for introducing into the packaging, with the produce, an anaerobic spore suspension, for example *Clostridium botulinum*, with subsequent sterilization of the product and its seeding onto a nutritive medium, distinguished by the fact that with the aim of decreasing the time period for conducting the analysis, the anaerobic spore suspension, which has a titer of $5 \cdot 10^3 - 5 \cdot 10^4$, is preliminarily placed in a hermetic packet of a heat-resistant material, and in this form is introduced into the product, predominantly into its central part.

USSR

UDC 664.1.033.4

(54) AN ELECTROPLASMOLYZER FOR PULVERIZED VEGETABLE RAW MATERIAL

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 11 (535076 (21) 2054965/28-13 (22) 26.08.74 2(51) A23 N 1/00

(72) SHCHEGLOV, YU. A., LAZARENKO, B. P. and KOVAL', N. P. (71) Institute of Applied Physics, AS Moldavian SSR

[Text] An electroplasmolyzer for pulverized vegetable raw material, consisting of a cylindrical housing and electrodes installed in it, distinguished by the fact that with the aim of intensifying the process, the electrodes have a sector profile and are installed along the housing at its periphery at an angle of 120° to each other with the formation of a plasmolysis chamber of figured shape, the plasmolysis chamber having cone-shaped sections for entry and egress of the raw material. Figures 2.

(54) AN APPARATUS FOR ARTIFICIAL LUNG VENTILATION

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI
in Russian No 42, 1976 p 13 (11) 535084 (21) 2114843/28-13 (22) 17.03.75
2(51) A 61 H 31/02

(72) BEREZIN, B. A. and GAL'PERIN, YU. SH. (71) Leningrad Production
Association "Krasnogvardeyets"

[Text] An apparatus for artificial lung ventilation, containing a flow generator, a device for regulating the duration of inhalation and exhalation with a ventilation-regime setter, an auxiliary-ventilation unit with a patient's respiratory attempts data unit, a time relay, and a logic circuit, distinguished by the fact that with the aim of providing for adequate lung ventilation during unsteady attempts of the patient, it is equipped with a device for automatic cutting in of the auxiliary ventilation unit, a scaling circuit connected with the device for automatic cutting in of the auxiliary ventilation unit and with the patient's respiratory attempts data unit, a device for automatic switching of the inhalation and exhalation time ratio, connected with the device for automatic cutting in of the auxiliary ventilation unit, a signalization device connected with the patient's respiratory attempts data unit and the scaling circuit.

Microbiology

HUNGARY

STUDIES ON THE LYMPHOID SYSTEM OF MICE WITH LETHAL ACUTE TOXOPLASMOSIS

Budapest ACTA MICROBIOLOGICA in English Vol 23, No 5, 1976 signed to press
26 May 75 pp 235-237

SZERI, Ilona, and CSOKA, Rozsa, Institute of Microbiology, Semmelweis
University Medical School, Budapest

[Text-English language abstract supplied by authors] Acute toxoplasmosis was induced in CFLP mice by infecting them intraperitoneally with the 25×10^3 multiplicity of the virulent RH strain of *Toxoplasma gondii*. The lymphoid system of mice succumbing to acute toxoplasmosis showed characteristic changes. Significant spleen hypertrophy (spleen index: 1.76), severe thymus atrophy (thymus index: 0.27) and a striking decrease of the lymphocyte count in blood (86%) was found as compared with the uninfected controls. Figure 1; References 5 (Western).

HUNGARY

R FACTORS DERIVED FROM SHIGELLA FLEXNERI STRAINS

Budapest ACTA MICROBIOLOGICA in English Vol 23, No 5, 1976 signed to press
19 Sep 75 pp 251-257

LASZLO, Vera G., and RIMANOCZY, I., National Institute of Hygiene, Budapest

[Text-English language abstract supplied by authors] Of 2492 *Shigella flexneri* strains isolated from dysenteric patients in Hungary in the years 1972-1974, 767 (30.8%) were resistant to 1-5 antibiotics. Resistance was due to R factors in 79.2% of the strains. Fertility inhibition experiments with F specific phages showed R factors to be fi^+ in 12.9% and fi^- in 87.1%. Of the antibiotic markers, the chloramphenicol-tetracycline resistance determinant was the most common (46.4%). Chloramphenicol resistance determinants were carried also by fi^- R factors. Figure 1; Tables 2; References 39.

HUNGARY

RESTRICTION AND MODIFICATION OF SHIGELLA FLEXNERI PHAGES BY R FACTORS

Budapest ACTA MICROBIOLOGICA in English Vol 23, No 5, 1976 signed to press
19 Sep 75 pp 259-270

LASZLO, Vera G., and RIMANOCZY, I., National Institute of Hygiene, Budapest

[Text-English language abstract supplied by authors] Out of 420 R factors derived from *Shigella flexneri* strains, 50.8% restricted *Escherichia coli* and *S. flexneri* phages. Phage restriction was produced both by fi^- and fi^+ R factors. The R factors were divided into nine groups on the basis of the efficiency of plating of *S. flexneri* phages. Changes of phage types were produced by transferring R factors of different restrictive types. The changes offered some information concerning the evolution of phage types. Studies on phage modification supported the grouping of R factors determined on the basis of restriction. R factors of different restrictive types were typespecific except for types VIII and IX. Modified phages proved to be highly practical for epidemiological purposes. The use of modified phages, as an additional phage-set besides the basic phage-set, was suggested to trace the source of strains which changed their phage types as an effect of R factors. Tables 6; References 26.

USSR

UDC 634.0.863:668.48:543.544.45

COMPOSITION OF HYDROLYTIC TERPENTINE

Moscow GIDROLIZNAYA I LESOKHIMICHESKAYA PROMYSHLENNOST' in Russian No 2, 1976 pp 7-9

PATSYUK, M. L., senior scientific co-worker, and TSIRLIN, YU. A., candidate of technical sciences, All-Union Scientific Research Institute of Hydrolysis

[Abstract] Terpene derivatives present in the condensate of vapors of the hydrolyzate of coniferous wood contaminate the obtained furfural. The results of analysis of the water-insoluble portion of the terpene compounds (hydrolytic terpentine) obtained at various Siberian hydrolysis plants are presented. The question of the elimination of terpene derivatives from the furfural has now acquired special urgency in connection with the planning and construction of large furfural-yeast plants, since in obtaining furfural from wood of deciduous species by a direct method the presence of coniferous wood is not excluded. The research laboratories and groups of hydrolysis plants are called upon to help develop effective technological methods of liberating from terpene derivatives the condensates of vapors resulting from the self-evaporation of hydrolyzate and furfural. References 4 (Russian).

USSR

UDC 634.0.863:65.011.56

INTRODUCTION OF AUTOMATION SYSTEMS AT BENDERSKIY BIOCHEMICAL PLANT

Moscow GIDROLIZNAYA I LESOKHIMICHESKAYA PROMYSHLENNOST' in Russian No 2, 1976 pp 19-21

FINKEL', A. I. and MALKIS, L. D., engineers, Southern State Institute for Planning of Establishments and Biosynthesis

[Abstract] Although the design of the Benderskiy Biochemical Plant envisaged complete automation, the plant's automation systems have been organized only gradually since operations started in 1971. The work of the hydrolytic equipment has proven very difficult to automate because the process of hydrolysis is itself periodic and is carried out by programmed variation of a number of parameters. It also is important that the medium is aggressive and capable of caramelization. Workers of the institute and plant are trying to accelerate solution of the problems.

USSR

UDC 634.0.863.5:628.179

EXPERIENCE WITH A CIRCULATING WATER SUPPLY SYSTEM

Moscow GIDROLIZNAYA I LESOKHIMICHESKAYA PROMYSHLENNOST' in Russian No 2, 1976
pp 21-22

SOFRONOVA, L. V., chief, central plant laboratory, Volzhskiy Hydrolysis
and Yeast Plant

[Abstract] At the plant circulating water or uncontaminated wastes of production are used to cool the heat exchanger equipment. The water in the hot and cold water chambers is not always free of impurities and measures have been adopted to eliminate them, including treatment to prevent biological growth, rust and scale. Experience in the use of a circulating cycle of water supply has shown that daily laboratory monitoring of the work of the system is needed.

USSR

UDC 663.1

(54) A METHOD FOR AUTOMATIC CONTROL OF THE PROCESS OF INCUBATING AEROBIC
MICROHARDNESS

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI
in Russian No 42, 1976 p 68 (11) 535340 (21) 2014/743/28-13 (22) 09.04.74
2(51) C 12 B 1/08

(72) KHANUKAYEV, YA. A., BABAYANTS, A. V., ALESHECHKIN, V. V., KOLPIKOV,
YU. G., and ZAKHARCHENKO, N. YE. (71) Groznyy Branch of the Scientific
Research and Planning Institute on Comprehensive Automation in the Oil and
Chemical Industry

[Text] A method for automatic control of the process of incubating aerobic microorganisms, consisting in measurement of the carbon dioxide concentration in spent gases and in the concentration of dissolved oxygen in the culture fluid and in the regulation of air delivery for aeration, distinguished by the fact that with the aim of increasing the efficiency of control and decreasing the consumption of air, air delivery for aeration is regulated in relation to the carbon dioxide concentration in spent gases if the consumption of the released carbon dioxide is greater than a given value, and if the consumption of the released carbon dioxide in the spent gases is less than the given value, air delivery for aeration is accomplished in relation to the concentration of dissolved oxygen in the culture fluid. Figures 1.

(54) AN APPARATUS FOR INCUBATING MICROORGANISMS

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 40, 1976 p 69 (11) 533629 (21) 2148605/28-13 (22) 25.06.75 2(51) C 12 B 1/10

(72) NADEZHDINA, A. V., SAVEL'YEV, D. D. and TOKAREV, B. N., (71) All-Union Scientific Production, Planning, and Designing Association of the Micro-biological Industry

[Text] 1. An apparatus for incubating microorganisms, constituting a container provided with diffusers concentrically established within it, an air collector and aerators connected to it, foam dampers, and fittings for supply of the nutritive substrate and pickup of the prepared product, distinguished by the fact that with the aim of increasing the productivity of the apparatus, each aerator is made in the form of a funnel under which a disk with slit-like grooves, for the passage of air, is fastened, the aerators being situated between the diffusers. 2. An apparatus according to paragraph 1, distinguished by the fact that the aerators are situated in checkerboard order. 3. Apparatus according to paragraph 1, distinguished by the fact that hydrovibrators for pulse delivery of the substrate are installed on the fitting for supply of the substrate. Figures 1.

(54) STRAIN VSB-640 OF THE CANDIDA GUILLIERMONDII YEAST

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 40, 1976 p 71 (11) 533634 (21) 2098240/28-13 (22) 17.01.75 2(51) C 12 K 3/00

(72) ROBYSHEVA, Z. N., GRADOVA, N. B., OSIPOVA, V. G., STEPANENKO, V. G., RODIONOVA, G. S., ARKHIPOVA, V. R. and AUERBAKH, T. L. (71) All-Union Scientific Research Institute for the Biosynthesis of Albuminous Substances

[Text] Strain VSB-640 of the Candida guilliermondii yeast is utilized for the production of fodder yeast on the basis of petroleum hydrocarbons. The yeast is capable of accumulating up to 63-68% protein. The strain is being stored in the collection of the All-Union Scientific Research Institute for the Biosynthesis of Protein Substances.

Morphological criteria. The cells of a 48-hour culture on malt wort are single, predominantly round or short-oval in shape, with a homogeneous protoplasm, bud actively. The size of the cells is 5.0 x 5.0 microns and 5.0 x 5.5 microns.

A streak on wort-agar is flat, smooth, mat, the center of the mark is somewhat darker. The edge is scalloped. Colonies on wort-agar are light-colored, smooth, with a fatty glitter. The center is slightly elevated, the edge is even. The colonies are uniform with respect to shape and size.

A 24-hour culture on malt wort does not form a ring and a film. In older cultures on wort the sediment is light in color, and is dense. Does not form spores. Overgrowth on glass plates forms a false mycelium. The blastospores are of elongated shape.

Physiological criteria. Relation to carbohydrates. Utilizes glucose, sucrose, maltose, galactose, xylose, arabinose, cellobiose, sorbose. Ferments glucose, sucrose, weakly ferments galactose.

Relation to nitrogen sources. Utilizes peptone, asparagine, urea, ammonium sulfate. Does not utilize nitrates. Does not liquefy gelatin. Grows at a temperature of 28-36°C, the most active growth is within the limits of 32-24°C. Grows at a pH from 3 to 6, the optimum pH is within the 4.5-5.0 interval.

USSR

UDC 576.858.095.38

VIRUS ASSOCIATIONS

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 signed to press 18 Nov 75
pp 8-16

POGODINA, V. V., Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences USSR, Moscow

[Abstract] This review of the literature focuses on three aspects of the subject: prevalence of virus associations, cooperative phenomena, and ecological and genetic factors in the interaction of virus populations. Permanent or random virus associations arise regularly among different taxonomic groups of viruses in the course of evolution. Cooperation among viruses is important for the performance of many of their functions in normal and transformed cell cultures as well as in infected bodies. Viruses serve as inhibitors, stimulants, and modifiers of the functions of other viruses, alter the spectrum of sensitive hosts, induce persistence, activate latent virus, and integrate the genome of RNA virus into the cell genome. Viruses function as a cooperative system in associations that include RNA and DNA viruses, infectious and oncogenic viruses, endogenous and exogenous viruses that cause acute infection and that persist in cells, and complete and defective virions. References 114: 51 Russian, 63 Western.

USSR

UDC 576.858.083.1

TRANSFECTION BY INTEGRATED PROVIRUSES

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 signed to press 26 Jul 76
pp 26-28

SOVETOVA, G. P., YAKHNO, M. A., GUSHCHIN, B. V., ABENOVA, U. A., SOLOV'YEV, V. D. and ZHDANOV, V. M., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya and Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] Three strains of continuous mouse L cells were compared. One contained only endogenous oncornavirus, another was contaminated by SV5 virus, and the third was isolated from the second, which was chronically infected with vesicular stomatitis virus (VSV). VSV and SV5 were recovered during the transfection of chick fibroblasts and VNK-21 cells by DNA from chronically infected L cells. Both infectious proviruses proved to be complete and active in maintaining the production of infectious viruses by the cells and in successful transfection of cultures sensitive to them. Figures 2; Table 1; References 4: 2 Russian, 2 Western.

USSR

UDC 616.988.75-036.1:576.858.75.095.5

SIGNIFICANCE OF THE HETEROGENEITY OF AN INFLUENZA VIRUS POPULATION IN THE CYTOPATHOLOGY OF INFLUENZA

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 signed to press 17 Jun 76
pp 32-37

SIDORENKO, YE. V., MAKSIMOVICH, N. A., KORNYSHENKO, N. P., KUZ'MENKOVA, L. V. and KUDRYAVTSEVA, T. P., Department of Virology, Kiev University, and Institute of Infectious Diseases, Ministry of Health UkSSR, Kiev

[Abstract] Separation of allantoic cultures of A/Hong Kong/68 and A/England/72 influenza viruses on DEAE-Sephadex-A-50 with phosphate buffer yielded three different subpopulations of the virus corresponding to three stages of elution with 0.1, 0.5, and 1.0 M NaCl, respectively. The subpopulations varied in pathomorphological manifestations of influenza and in the immune response they induced. Subpopulations 1, 2, and 3 killed 66, 24, and 2% of mice inoculated with them. Subpopulations 1 and 2 caused marked proliferation, desquamation, and hypertrophy of alveolar cells. Subpopulation 3 induced hemorrhages in the lungs. Virus was found in the lungs of mice as long as 6 months after they were infected with subpopulations 1 and 3. Figure 1; References 20: 14 Russian, 6 Western.

USSR

UDC 576.858.087.23

RELATIONSHIP BETWEEN THE REPRODUCTION OF THE ALPHAVIRUS VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS, PRODUCTION OF TYPE D ONCORNAVIRUS, AND METABOLISM OF THE INFECTED CELLS

Moscow VOPROSY VIRUSOLOGII in Russian No 1, 1977 signed to press 4 Mar 76
pp 50-54

YERSHOV, F. I., TAZULAKHOVA, E. B., SOKOLOVA, T. M., NOSIK, M. N., and ZAYTSEVA, O. V., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] A comparative study was made of the reproduction of the alphavirus Venezuelan Equine encephalomyelitis virus in chick embryo fibroblasts and type D oncornavirus produced spontaneously by human continuous cells (HEp-2). While the yield of structures from noninfected chick embryo fibroblasts was slight (0.1%), the yield from infected cells increased almost 150 times (14%). In the HEp-2 cells, the yield was much lower (0.2 to 1%) and it changed little even after prolonged cultivation. Analysis of the action of ethidium bromide, an inhibitor of protein synthesis, on the VEE and OV-D viruses revealed that it significantly suppressed both the synthesis of viral RNA and the production of the two viruses. The effect of another inhibitor, cycloheximide, on the reproduction of VEE and OV-4 viruses was less pronounced. In the case of VEE virus, the effect depended on the time it was added to the culture. The production of OV-D virus, on the other hand, was not only not inhibited, it was actually stimulated by cycloheximide. Figure 1; Tables 2; References 5: 4 Russian, 1 Western.

USSR

UDC 576.858.098.396.332.047)

INFECTIOUS RNA IN VIRUSES WITH A NEGATIVE GENOME

Moscow VOPROSY VIRUROLOGII in Russian No 1, 1977 signed to press 29 Aug 76
pp 3-8

ZHDANOV, V. M. and MEN'SHIKH, L. K., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] It appears from this review of the literature that virion RNA in viruses with a negative genome (e.g., rhabdovirus, paramixovirus, and arenavirus) are not infective in themselves because infection is initiated in these viruses by transcription of their genome, possibly by virion-associated RNA-dependent polymerase RNA. Since this enzyme is absent in cells of eukaryotes, RNA cannot by itself initiate an infection. Only when transcription of the genome has taken place can the newly synthesized virus-specific information RNA initiate, or more exactly, continue an infection after ensuring the

synthesis of virus-specific proteins, possibly replicase, needed for further development of the viral reproduction process. Hence, the complex of virus-specific RNA formed in the early stage of a viral infection, which appears to be a transcriptive intermediate, may be infective and upon penetrating into sensitive cells bring about the complete cycle of viral reproduction.

References 33: 11 Russian, 22 Western.

USSR

UDC 576.851.48.06.097.3.095.18:615.37:547.963.32

INCREASING RIBONUCLEIC ACID PREPARATIONS FOR THE NONSPECIFIC RESISTANCE OF ANIMALS TO PATHOGENIC E. COLI

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2, 1977 signed to press 17 May 76 pp 68-73

ZEMSKOV, V. N., BARSUKOV, A. A., ZEMSKOV, A. M., SHILOV, V. M. and POKROVSKIY, A. K., Voronezh Medical Institute

[Abstract] Ribonucleic acid yeast and sodium nucleinate have significantly raised the insusceptibility of mice to pathogenic escherichia and Salmonella of typhus abdominalis. Ineffective single doses of the nucleinate have created a stress resistance upon multiple utilization; long-term use was not accompanied by the onset of tolerance to the preparation. The basic mechanism of the induced phenomenon consists of increasing elimination of bacteria and detoxication of the endotoxin which is accomplished mainly by the activity of labile phagocytes. Figures 2; Tables 4; References 8 (Russian).

USSR

UDC 576.858.9:575.24

NEW LAMBDOID PHAGES OF ESCHERICHIA COLI: REPORT III. SPECIFIC TRANSDUCTION AND LOCALIZATION OF PROPHAGES

Moscow GENETIKA in Russian Vol 13, No 1, Jan 77 signed to press 25 Jun 76 pp 95-104

TSYGANKOV, YU. D. and KRYLOV, V. I., All-Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms

[Abstract] In the previous type reports of this series it was shown that the new phage has a number of properties similar to the family lambdoid phages. Some of these phages could be located in the same sections of bacteria chromosomes as known lambdoid phages; between the gal and bio genes in the triptophan operon. Using three methods (1) specific transduction of bacterial markers; 2) conjugational crossing; 3) mapping of prophages), a number of prophages

are localized on the chromosome of E. Coli K-12. Sixteen strains of K-12 were used. The specific transduction followed the Takeda (1970) method, the crossing made use of the method of Zhakob, Volman (1962). There were eight parts to the experiment: the gal-bio, and trp transductions with known types of immunity; the study of the transduced activity of phages with new types of immunity; the localization of the phiM184 prophage with conjugational crossing; the determination of the localization of phiM184 prophage in crossings with breaks. The localization of the phiM209 prophage; the preliminary localization of the phiM181 and phiM417 prophages. Only one phage phiM61 localized between the gal and bio regions has new types of immunity. The site specific recombination and the structural elements of the sites of various lambdoid phages easily recombined in the immunity region. Such processes perhaps take place in nature. Natural hybrid forms having immunity for one known lambdoid phage and the system of site specific integration with another were not found. The integration sites of the phages in the gal-bio region are located as follows: gal-att phiMimmphi81-attphiMimmlambda-att phiMimm434bio. Trp transduction in new phages corresponds to the level in phi80. The phiM184 prophage is located between 29 and 32 minutes of the map, and the phiM209 between 32 and 35 minutes. The integration sites of phiM181 and phiM209 are new for lambdoid phages. Figures 2; Tables 4; References 12: 5 Russian, 7 Western.

USSR

UDC 575.591

FREQUENCY OF CHROMOSOME ABERRATIONS OF PERSONS WHO LIVE IN DISTRICTS WITH
DIFFERENT EXPENDITURES OF PESTICIDES

Moscow GENETIKA in Russian Vol 13, No 1, Jan 77 signed to press 27 Jan 76
pp 158-161

PILINSKAYA, M. A. and ZHURKOV, V. S., All-Union Scientific Research Institute
of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Ministry of
Health USSR, Kiev; Institute of Medical Genetics, Academy of Medical Sciences
USSR, Moscow

[Abstract] As part of a comprehensive study of the influence of pesticides
on human health, two agricultural areas in the Ukraine were selected by
specialists at the All-Union Scientific Research Institute of the Hygiene and
Toxicology of Pesticides. One area was the control and the experimental.
The content of poisonous chemicals in the environment was higher in the experi-
mental area but did not exceed allowable norms. A total of 55 persons (15-17
years old and divided into two groups) was studied. The control group had a
total of 95 aberrations, 1,799 per 100 metaphases, and the experimental group
had a total of 106; 2,200 per 100 metaphases. The percentage of aberrant
cells was 2.12 in the experimental group and 1.74 in the control. Chromatid
aberrations prevailed in the lymphocytes of all the subjects (94.7% for the
control and 93.4% for the experimental). The resulting material can be used
as initial control data for studying the intensity of spontaneous mutagenesis
in people living in such areas. Tables 1; References 5 (Russian).

USSR

UDC 575.591

GENETICALLY DETERMINED PATHOLOGY OF FERTILITY IN THE POPULATION OF PARENTAL
COUPLES WITH SPONTANEOUS (HABITUAL) ABORTIONS

Moscow GENETIKA in Russian Vol 13, No 1, Jan 77 signed to press 26 Jan 76
pp 138-145

KULAZHENKO, V. P., LEVCHENKO, N. N., USOYEV, S. S. and ZHUKOVA, T. V., Minsk
State Medical Institute; Scientific Research Institute for Protection of
Mothers and Children, Minsk

[Abstract] 272 women, of whom 210 (77.2%) had habitual abortions, underwent
clinical cytogenic observation and 155 women underwent dermatoglyphic studies,
using the Cummins and Middel (1961) method. The resulting materials were
compared to that of 400 healthy men and women, and to material in the literature
covering 691 couples, and a total population of 37,945 infants and adults.
Chromosomal aberrations were found in 2.5% of the women and 1.4% of the men.

Chromosomal aberrations were found in 4.5% of the women suffering from various types of dysfunctions of the ovaries and who had experienced abortions of hormonal etiology. Statistical studies indicate the inheritability of a tendency towards hormonal dyscorrelation and dysfunction of the ovaries. The families of couples experiencing habitual abortions had a statistically significant (R less than 0.01) frequency of infertile marriages (34%). Extensive reproductive pathology in the pedigrees and the nature of abnormal dermatoglyphics in instances of nonaberrant karyotypes of the probands indicate a tendency towards hormonal dyscorrelations and dysfunction of the ovaries. Of 156 women under observation, 69.2% had repeated spontaneous abortions, and 30.8% had normal births. Figures 5; Tables 1; References 34: 8 Russian, 3 German, 1 Romanian, 22 Western.

USSR

UDC 612.822.3.087

SPINDLE INTERACTION INDUCED BY ELECTRICAL STIMULATION IN THE CORTICAL AREAS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR imeni I. M. SECHENOVA in Russian
Vol 63, No 1, Jan 77 signed to press 23 Jul 76 pp 3-11

NARIKASHVILI, S. P., KADZHAYA, D. V., TIMCHENKO, A. S. and NARIKASHVILI, M. S.,
Institute of Physiology imeni I. S. Beritashvili, Academy of Sciences Georgian
SSR, Tbilisi

[Abstract] Adult unanesthetized cats were given repeated small doses (2-3 mg/kg) of nembutal after the tops of their skulls had been removed. The stimulation of the auditory or somatosensory areas caused stimulation in the association cortex. The excitation of one area has an effect on the rhythmic activity of other zones. The spindle which is activated from the primary cortex has a lower frequency than the local spindles. The stimulation of the association cortex can also control the stimulus in the primary area, although it is considerably less distinct and occurs when stimuli exceed the threshold of the local spindle by a factor of three-four. The interaction is manifested by a blocking of the spindles being tested when the two stimulations are combined. Several interpretations of the results are discussed. Figures 4; References 8 (Russian).

USSR

UDC 612.825.55+612.85

CHARACTERISTICS OF ELECTRICAL REACTIONS OF THE CAT'S SENSIMOTOR CORTEX TO SOUND STIMULI WITH DIFFERENT FREQUENCIES

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian
Vol 63, No 1, Jan 77 signed to press 12 Jul 76 pp 29-36

KULIKOV, G. A. and FUTER, L. I., Physiology Institute of Leningrad State University imeni A. A. Zhdanov

[Abstract] The threshold, amplitude, and probability of generated potentials and characteristic reactions of neurons of the sensimotor cortex of cats during stimulation by various sound frequencies are studied. The lowest threshold was found in the 1.6-2.0, and 3.2-3.6 kilohertz regions. The probability of generated potentials has a maximum at 1.6 and 3.2 kilohertz. The dependence of the amplitude of the potential on the frequency has a maximum at 0.8, 1.6, and 3.2 kilohertz. Neuron reaction to sound stimuli has high thresholds (60-90 decibels) and a wide frequency range of responses. More than half of the neurons have the minimum threshold reaction and maximum probability of reaction at frequencies near 0.8, 1.6, and 3.2 kilohertz. The work was carried out on 40 adult cats, anesthetized with alpha-chloralose. As alpha-chloralose can have an active influence on the sound input to the

sensimotor region of the cortex, it cannot be excluded that the influence of the anesthetic on these thresholds involves effects on the structure of the limbic system and could play an important role in determining the significance of sensory stimuli. Morphological and electrophysiological data show that the sensomotor cortex is directly linked to the sound sensor system. The frequency selectivity which was revealed is possibly a result of interaction here. The very existence of this selectivity indicates the accuracy of the earlier suggestion (Batuyev, et al. 1971) about the existence of an associative channel between the sound sensory system and the frontal region of the cortex. Figures 5; References 23: 10 Russian, 1 German, 1 Chinese, 11 Western.

USSR

UDC 612.843

OSCILLATORY ACTIVITY OF SINGLE ELEMENTS IN THE ISOLATED CARP RETINA

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian
Vol 63, No 1, Jan 77 signed to press 21 Jul 76 pp 58-66

YUSUPOV, R. G. and SUPONITSKIY, V. L., Department of Physiology of Higher Nervous Activity, Moscow

[Abstract] The retina of carp [*Cirprinus carpio* L.] were subjected to light stimuli. Two types of oscillations were discovered in photoreceptor, bipolar, and ganglion cells: one having a frequency of 6-12 hertz which was continuously generated in darkness and suppressed by light and the other was in the 20-50 hertz range and was observed during the switching on and off of light. Previous authors consider the oscillations to be of a synaptic nature, generated by feedback from photoreceptor and bipolar amacrine cells. The dark and light oscillations were registered in bipolar cells and can be explained by synaptic interaction with the surface synaptic layer. On the other hand it cannot be excluded that the oscillations are generated in the internal retina by feedback from bipolar and amacrine cells. The prolonged suppression of the dark oscillation can be explained by the development of after effects. An important role here is possibly played by after effect potentials characteristic of dark adaptation elements in the retina. The characteristics of the oscillation (amplitude, form of response, and duration) change in a regular pattern depending on the parameters of the light stimuli. The frequency of oscillations does not depend on the characteristics of the stimuli. The data obtained indicate that the oscillations are part of the processes transmitting and coding information in stimuli. Figures 5; References 26: 4 Russian, 1 German, 21 Western.

YUGOSLAVIA

BIOLOGICALLY ACTIVE ADAMANTANE DERIVATIVES

Zagreb ARHIV ZA HIGIJENU RADA I TOKSIKOLOGIJU in Serbo-Croatian Vol 27, No 4, 1976 signed to press 2 Nov 76 pp 335-345

MAJERSKI, Z., SKARE, D., JANJATOVIC, J., HAMERSAK, Z., and VINKOVIC, B.,
Institute 'Rudjer Boskovic' Zagreb

[Abstract] Adamantane derivatives cover a very broad spectrum of biological activities. They show good results in parkinsonism, diabetes, hypertension, cardiac arrhythmias, depression, and are also well known as antibiotic, antiviral, anabolic, cytostatic, spasmolytic, and immunosuppressive agents, to name a few applications. Their biological activity seems to be based largely on their affinity for lipophylic portions of protein molecules, their faster transportation across the cellular membrane, and higher resistance to metabolic degradation. The report brings out the characteristics for each category and compares them to drugs which belong to different chemical entities but are used in treating the same diseases. New adamantane derivatives are appearing daily on the market and are growing in geometric progression. Twenty-two structural formulas are given. References 52.

YUGOSLAVIA

EFFECT OF MONO- AND BIS-QUATERNARY PYRIDINIUM OXIMES ON THE ACUTE TOXICITY AND ON THE SERUM CHOLINESTERASE INHIBITORY ACTIVITY OF DIOXACARB, CARBARYL, AND CARBOFURAN

Zagreb ARHIV ZA HIGIJENU RADA I TOKSIKOLOGIJU in Serbo-Croatian Vol 27, No 4, 1976 signed to press 20 Apr 76 pp 289-295

BOSKOVIC, B., VOJVODIC, V., MAKSIMOVIC, M., GRANOV, AZRA, BESAROVICH-LAZAREV, SVETLANA, and BINEFELD, Z., Army Technical Institute, Belgrade and 'Bosnaljek' Sarajevo, Yugoslavia

[Abstract] The purpose of the experiment was to determine: 1. The acute toxicity of the three carbamates: Carbaryl, Carbofuran, and Dioxacarb and the influence of oximes and Atropine on their toxicity, and 2. The inhibition of serum cholinesterase by these carbamates in the presence of oximes. Atropine showed significant degree of protection in poisoning of mice with Dioxacarb and Carbofuran but had negligible effect on Carbaryl. On the other hand, pyridinium oximes potentiated the toxicity of Carbaryl but had varying degrees of antagonistic effect on Dioxacarb and Carbofuran. It is of significance that the anticholinesterase activity of Carbaryl, Dioxacarb, and Carbofuran is increased by the oximes. However, this activity in vitro cannot explain their effect on the toxicity of these compounds in vivo although it offers some indication as to the direct interaction of carbamates and oximes. In conclusion it can be stated that the use of oximes in carbamate poisoning is contraindicated. Figure 1; Tables 2; References 9.

USSR

UDC 632.951

VINYL PHOSPHATE--A PROMISING INSECTICIDE

Moscow ZASHCHITA RASTENIY in Russian No 12, 1976 p 26

ANDREYEVA, G. I., LYASHENKO, L. I. and MOLCHANOVA, V. A., All-Union Scientific Research Institute of Forestry and Mechanization of Forestry

[Abstract] Vinyl phosphate is a new native organophosphorus insecticide with an intestinal contact effect, having as its active ingredient 0,0-dimethyl-0,1,2,4,5-trichlorophenyl (2-trichlorovinyl) phosphate. This preparation is similar to "Gardona," manufactured by the English Shell firm and known under the name of "Tetrachlorvinphos," "Rabont," and SD-8447. It is highly effective against butterflies and beetles and but slightly toxic for warmblooded animals. A test batch of this preparation was tested on grubs of the azygous silkworm. Under specific experimental conditions it was found that destruction of age-one grubs varied from 96 to 98 percent when using an 0.05 percent concentration, and destruction was total with an 0.1 percent concentration. Ninety-one percent of age-three grubs were destroyed with 0.05 percent vinyl phosphate, and 100 percent with 0.1 percent. Other insecticides proved to be inferior. Vinyl phosphate was shown to have a toxic effect of longer duration than other insecticides such as "Khlorofos." A count was made of grubs destroyed a week after spraying the branches of a birch tree with vinyl phosphate. The figure for vinyl phosphate was 68.5 ± 10.2 percent, as compared with 3.5 ± 2 percent for "Khlorofos." The prolonged toxic effect of the new insecticide accounts for its higher effectiveness.

USSR

UDC 615.214.015.4:612.766.1.014.43

INFLUENCE OF PSYCHOTROPIC SUBSTANCES ON THE PHYSICAL EFFICIENCY OF ANIMALS UNDER HIGH AND LOW TEMPERATURE CONDITIONS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 40, No 2, Mar/Apr 77 signed to press 29 Jan 76 pp 133-136

LYUBIMOV, B. I. and OSTROVSKAYA, G. Z., Laboratory of General Pharmacology, Institute of Pharmacology, Academy of Medical Sciences USSR, Moscow

[Abstract] A comparative study is presented of the influence of psychostimulators such as phenamin, caffeine and sydnocarb on the physical efficiency of rats under hot and cold conditions. The experiments were performed using male white rats weighing 180-220 g. The animals were subjected to heat (40 C, relative humidity 28%) and cold (-10 C) for 1 hour. The physical load model used to evaluate the stimulating effect of the preparation was the method of forced swimming with an additional weight of 5% of the body weight. The rats were placed in the climate chamber for 30 minutes, then the preparation was

administered, the rats were held 30 more minutes in the climate chamber, after which the swimming test was administered. The efficiency of the animals was estimated on the basis of maximum swimming time. Phenamin and caffeine were administered intraperitoneally, sydnocarb internally as a starch suspension. Control animals were given the same preparations in the same doses 1/2 hour before the swimming test. Doses used were: phenamin 0.5-1.5 mg/kg, caffeine 20.0-50.0 mg/kg, sydnocarb 3.0-65.0 mg/kg. The rectal temperature of the animals was recorded before placement in the climate chamber, after one hour exposure in the chamber and after swimming. It was found that phenamin, caffeine and sydnocarb increased efficiency under normal thermal conditions. The effect of sydnocarb was manifested over a much broader range of doses than the effect of phenamin or caffeine. Under hyperthermal conditions, caffeine and sydnocarb increased the physical efficiency of the animals, phenamin had practically no effect. Under hypothermal conditions, phenamin increased the efficiency of the animal to the greatest extent, caffeine and sydnocarb to lesser extents. Table 1; References 11: 5 Russian, 6 Western.

USSR

UDC 615.217.32.015.4:612.822.3

INFLUENCE OF CHOLINERGIC SUBSTANCES ON POTENTIALS OF THE BRAIN EVOKED BY STIMULATION OF THE DENTAL PULP

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 40, No 2, Mar/Apr 77
signed to press 30 Jun 76 pp 141-146

DEGTYAREV, V. P., Department of Normal Physiology, Moscow Medical Stomatological Institute imeni N. A. Semashko

[Abstract] A study was made of the influence of M and N cholinergic compounds administered to the cavities in the brain on evoked cerebral cortex potentials in the rabbit upon stimulation of the dental pulp. The experiments were performed on 18 rabbits under nembutal narcosis (40 mg/kg). In some of the experiments, atropine was administered intravenously. The bilateral readings of first responses were performed from the points of the corresponding dental projections on the surface of the skull. The pulp of the central incisors was stimulated by means of a rectangular electrical current pulse through implanted electrodes. It was found that administration of the M-cholinomimetic arecoline to the ventricle of the brain caused a decrease in the amplitude of first responses in the sensomotor zone of the cortex in response to stimulation of the dental pulp, while administration of the N-cholinomimetic lobeline increased the amplitude of first responses. Administration of the M-cholinolytic atropine increased the amplitude of the first responses, whereas the N-cholinolytic IEM-506 suppressed the first responses. The data produced indicate that M-cholinergic structures prevent the formation of "toothache" where N-cholinergic substances enhance this process. Figure 1; References 33: 21 Russian, 12 Western.

PHENCAROL -- AN ANTIHISTAMINIC PREPARATION OF THE QUINUCLIDYL-CARBINOL GROUP

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 40, No 2, Mar/Apr 77
signed to press 15 Apr 76 pp 158-162

KAMINKA, M. E., Laboratory of Pharmacology, All-Union Scientific Research
Chemical-Pharmaceutical Institute imeni S. Ordzhonikidze, Moscow

[Abstract] Results are presented from a pharmacological study of phencarol in comparison with dimedrol (diphenhydramine) and diprazine (promethazine) and suprastine. The antihistaminic activity of phencarol was studied in isolated sections of the ileum of guinea pigs, determining the influence of the preparation on the spasmogenic effect of histamine. The effect of phencarol and other antihistaminic preparations on the bronchoconstrictor effect of intravenous histamine (5 $\mu\text{g/kg}$), serotonin (5 $\mu\text{g/kg}$), acetylcholine (10 $\mu\text{g/kg}$) was studied on guinea pigs under narcosis. The latest period of manifestation of intoxication was determined on nonnarcotized guinea pigs, as was the number of lethal results upon inhalation of an aerosol of 1% histamine solution for 5 minutes. Phencarol was administered as a 2% suspension and 1% solution in carboxymethylcellulose by stomach catheter. The new preparation phencarolhydrochloridequinuclidyl-3-diphenylcarbinol has high antihistaminic activity. It is superior in antihistaminic activity and duration of action to dimedrol. Phencarol is less toxic than dimedrol. In comparison to dimedrol and particularly diprazine, phencarol has significantly less inhibitory effect on the central nervous system. Clinical study has confirmed the high effectiveness of phencarol for allergic diseases and its good patient tolerance. It usually causes no dryness of mucous membranes, no sense of fatigue and has no manifest sedative or hypnotic effect. Figure 1; Tables 4; References 8: 3 Russian, 5 Western.

(54) DERIVATIVES OF 1-OXYADAMANTAN WHICH MANIFEST ANTICATALEPTIC ACTIVITY

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI
in Russian No 42, 1976 p 16 (11) 535085 (21) 2015418/28-13 (22) 26.03.74
2(51) A 61 K 31/03

(72) SKOLDINOV, A. P., VIKHLYAYEV, YU. I., LYUBIMOV, B. I., KLIMOVA, N. V.,
SHMAR'YAN, I. M., UL'YANOVA, O. V. and LAVROVA, L. N. (71) Institute of
Pharmacology, Academy of Medical Sciences USSR

[Text] Derivatives of 1-oxyadamantan of the formula



where R-- > CH_2 ; > CHNH_2 ; > C=O

> CHNHBu ; $\text{> CHN(CH}_3)_2$

which manifest an anticataleptic activity.

USSR

UDC 615.917:547.1'149

NEW DATA ON THE PARTICULARS OF BIOLOGICAL ACTION OF ORGANOMERCURY COMPOUNDS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 2, 1977 pp 22-28

SHAKHBAZIAN, G. KH., SHEVCHENKO, A. M., BORISENKO, N. F., GONCHARUK, G. A.,
BALASHOV, V. YE. and UVARENKO, A. R., Kiev Medical Institute imeni A. A.
Bogomolets

[Abstract] A report on recent research in the use of organomercury compounds as pesticides. It has been found that seed treatment with organomercury disinfectants entails the hazard of accumulation of mercury in soil, vegetation and eventually in animal bodies. There is a real danger of migration of these pesticides into plants and animals in open bodies of water, and consequently a potential threat to people who use these plants and animals as food. The use of organomercury compounds in agriculture contaminates the air and environs of the working area. This is because of the volatility of organic derivatives of mercury and their capacity for absorption by surrounding objects, creating secondary sources of air contamination. While earlier studies had shown that mercury compounds are toxic in large doses, it has recently been found that organic compounds of mercury can be dangerous in concentrations close to the maximum permissible value. For instance ethylmercuric chloride, phenylmercuric acetate and other mercury compounds administered to experimental animals over a long period in concentrations 2-10 times the maximum permissible value cause gastric, pancreatic and liver disorders. Inhalation of organomercury compounds in the maximum permissible concentration leads to measurable shifts in heart function. These changes apparently involve both disruption of extracardial regulation and dystrophic changes in the heart muscle itself. Organomercury compounds also disrupt reproductive processes and reduce the viability of progeny. It has been found that organic compounds of mercury (ethylmercury and phenylmercury compounds) can form a protein-mercury conjugate that acts as an antigen and involves the immune system of the organism in the pathogenic process. Recent data also show that organomercury compounds have a highly toxic effect on the endocrine and central nervous systems. Figures 5; Tables 2; References 10: 9 Russian, 1 Western.

A METHOD OF DETERMINING STRESS INTENSITY IN INTACT ANIMALS BY RECORDING VARIATIONS IN THE SENSITIVITY OF RESPIRATION TO INHIBITORS (BASED ON THE EXAMPLE OF SODIUM AMYTAL)

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 61, No 2, Feb 77 pp 282-291

MASLOV, S. P., Department of Vertebrate Zoology, Biology Faculty, Moscow State University

[Abstract] The paper describes a technique for physiological and ecological studies of the stress syndrome on mouse-like rodents. The method involves measurement of the stability of respiration under the inhibiting action of sodium amyntal. A brief review is given of the initial research that suggested that oxygen demand might be a usable experimental indicator of stress intensity, and some of the difficulties that had to be overcome are discussed. Among the advantages of sodium amyntal over other drugs that might be used in this kind of research are the stable properties of the chemical that permit long-term storage without loss of activity, the wide "pharmacological latitude," i.e., considerable difference between the minimum effective concentration and the minimum toxic concentration, high solubility in water and normal saline solution, low danger of accumulation in tissues, availability, low cost and low toxicity. After establishing the oxygen demand, the experimental animals were given a hypodermic injection of 120 mg of sodium amyntal per kg of body weight. Then the oxygen demand was measured at maximum suppression of respiration. The sensitivity of respiration to the drug was evaluated by the percentage suppression of respiration i.e., the reciprocal of 100 times the ratio of oxygen demand at the instant of maximum suppression of respiration to the initial oxygen demand. This index has the advantage of increasing in numerical value with increasing stress. Tables are given summarizing test results on the effect of various stress stimulators on amyntal-resistance of respiration in white mice: ACTH, cortisone, epinephrine and levarterinol. The results show that the increase in sensitivity of respiration to the inhibiting action of amyntal is specific to the stress syndrome, and does not arise in states of agitation that are not accompanied by an increase in the level of glucocorticoids in the blood and tissues of the body. The proposed technique does not alter the intact state of individual animals or the structure of the population (or experimental group). Tables 3; References 20: 18 Russian, 2 Western.

USSR

UDC 616.127-005.8

CARDIODYNAMICS AND CONTRACTILE ABILITY OF MYOCARDIUM WITH IMMUNE HEART INJURY

Kiev FIZIOLOGIYNIY ZHURNAL in Ukrainian Vol 23, No 2, Mar/Apr 77 signed to press 30 Nov 76 pp 182-190

MOYBENKO, A. A. and SAGACH, V. F., Department of Experimental Cardiology, Institute of Physiology imeni A. A. Bogomolets, Academy of Sciences Ukr SSR, Kiev

[Text-English language abstract supplied by authors] Cardiodynamics and contractile ability of the heart left and right ventricle myocardium were studied on dogs with immune injury which appears after anticardial cytotoxic serum (ACS) administration into one of the branches of the left coronary artery. It is shown that the intracoronary administration of ACS is accompanied by essential decrease in the cardiac output, disorders in the contractile function of the left ventricle and, to less extent, of the right one. As a result of cytotoxic injury of the myocardium, a peculiar form of cardiovascular insufficiency develops wherein the myocardium contractile function lowering is accompanied by expressed decrease in venous return to the heart. Figures 3; Tables 2; References 47: 22 Russian, 1 Ukrainian, 24 Western.

USSR

UDC 612.826.181.1

CHARACTER OF THE HEMODYNAMIC SHIFTS DURING AN ORIENTING-SEARCH REACTION CAUSED BY HYPOTHALAMIC STIMULATION

Kiev FIZIOLOGIYNIY ZHURNAL in Ukrainian Vol 23, No 2, Mar/Apr 77 signed to press 30 Nov 76 pp 154-161

KARTSEVA, A. G., LITVINOVA, A. N., LUKHANINA, YE. P., VASIL'YEVA, N. Z., PYL'TYAY, L. G. and SHAMSUTDINOVA, A. G., Department of the Physiology of Blood Circulation, Institute of Physiology imeni A. A. Bogomolets, Academy of Sciences Ukr SSR, Kiev

[Text-English language abstract supplied by authors] A comparison of the behavioral and hemodynamical reaction caused by posterior-lateral hypothalamus stimulation permits elucidating the functional significance of the mentioned hemodynamical shifts. It is shown that there are certain regions in the posteriorlateral hypothalamus, stimulations of which may result in appearance of the orienting-search reactions changed by other types of behavioral reactions due to stimulus amplitude increase and in the proper orienting-search reactions, the qualitative character of which is not changed with the variations of the stimulus parameters. The complex hemodynamical reactions (acceleration of the heart rate, increase in the circulation volume of the

hind limb and aorta vessels, and increase of arterial pressure) of the hypothalamic origin, may be considered as an adaptative reaction of the cardiovascular system providing readiness of the animal for an impending muscular activity. Figures 3; References 25: 9 Russian, 16 Western.

USSR

UDC 612.13:612.826

EFFECT OF STIMULATING VARIOUS SECTORS OF THE HYPOTHALAMUS ON THE RHYTHM OF CARDIAC ACTIVITY

Kiev FIZIOLOGIYNIY ZHURNAL in Ukrainian Vol 23, No 2, Mar/Apr 77 signed to press 19 Jul 76 pp 162-168

BEGEKA, A. D., Institute of Physiology, Kiev State University

[Text-English language abstract supplied by author] Change in the cardiac rhythm with stimulation of the grey tuber, papillary and ventromedial nuclei of hypothalamus and with destruction of grey tuber and papillary nuclei was studied in chronic experiments on dogs. The investigations carried out showed that stimulation of the mentioned structures of the hypothalamus evoked four types of cardiac rhythm reactions. The magnitude and direction of the rhythm changes depended on the parameters of the stimulating current. Under these conditions the cardiac rhythm changes were within the limits of 30-300 contractions per minute. When stimulating grey tuber, papillary and ventromedial nuclei of hypothalamus by the threshold current intensity the following occurred: cardiac rhythm slowing (I type of reactions); slowing, with following acceleration or, vice versa, acceleration with following slowing (II type of reactions); absence of changes during stimulation and rhythm slowing after stimulating (III type of reactions). Hypothalamus stimulation by superthreshold current resulted in tachyrrhythmia and rhythm changes of different direction after stimulation (IV type of reactions). The destruction of the grey tuber and papillary nuclei was accompanied by the cardiac rhythm slowing and elongation of P-Q, Q-T and T-P. Figure 1; Tables 2; References 42: 32 Russian, 2 Ukrainian, 8 Western.

USSR

UDC 576.31/.34:591.147.6:591.512.6

MORPHOMETRIC STUDY OF THE ULTRASTRUCTURE OF CELLS IN THE ZONA FASCICULATA OF STRESSED RATS

Leningrad TSITOLOGIYA in Russian No 2, 1977 signed to press 6 Feb 76 pp 131-136

GORDIYENKO, V. M., BOGDANOVA, T. I. and SHVIRST, E. M., Institute of Endocrinology and Metabolism, Ministry of Health UkSSR, Kiev, and Institute of Biophysics, Academy of Sciences USSR, Pushchino

[Abstract] Morphometric study of slices from the zona fasciculata of rats immobilized for 4 hours revealed signs of intensified functioning of the cells: enlargement of the mitochondria and smooth endoplasmic reticulum and contraction of the liposomes, i.e., basic changes in the organelles active in the elaboration of corticosteroids. Longer immobilization (24 hours) resulted in the predominance of degenerative changes. The mitochondria and reticulum shrank while the number of destroyed mitochondria increased and large portions of cytoplasm experienced focal degradation. Thus, the alarm stage (4 hours' immobilization) was characterized by activation of adrenocortical cells and the maximum stress stage (24 hours' immobilization) by phenomena of degeneration. Figures 4; Table 1; References 28: 23 Russian, 5 Western.

USSR

UDC 612.45+612.39

PROLONGATION OF LIFE WITH PERIODIC GROWTH RETARDING DIET AND ITS EFFECT ON AGE-BOUND CHANGES IN THE HYPOTHALMIC-HYPOPHYSEAL-ADRENAL SYSTEM

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian Vol 63, No 1, Jan 77 signed to press 9 Feb 76 pp 73-78

NESTERENKO, G. A., NIKITIN, V. N. and STAVITSKAYA, L. I., Institute of Biology of the State University, Kharkov

[Abstract] Male white rats of the Vistar line were fed a complete but low calorie diet to retard growth. Prolonged retardation of growth has an influence in the age-bound changes in the hypothalamic-hypophyseal-adrenal system. The secretions of hypothalamic extract increased by 231% in the test animals, after 12 months the increase was 90% and did not change up until 24 months. These changes are presented in tables. Thus corticotropin releasing factor activity increases with restricted diet and is maintained for 2 years at the 3 month level of the control animals. Tables 4; References 12: 8 Russian, 4 Western.

USSR

UDC 612.53+612.27

THERMOREGULATORY REACTIONS IN ANIMALS IN A HELIUM-OXYGEN HIGH PRESSURE ATMOSPHERE

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian
Vol 63, No 1, Jan 77 signed to press 30 Mar 76 pp 146-149

TROSHIKHIN, G. V. and DONINA, ZH. A., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR

[Abstract] Male rats of the Wistar line weighing 240-310 grams each (10-12 animals in each group) were kept in a barochamber which was initially filled with air at 28 degrees, later by a helium-oxygen mixture at 40 kg/cm² at 30, 31, 32, and 33 degrees. In the latter conditions the skeletal muscle activity of the animals increased by an average of 30-33%. In the 31-32 degree temperature range there was a 12.6% increase in carbon dioxide exhalation. The lack of thermoregulatory trembling in the 30-33 degree range indicates that this is a neutral temperature under these conditions. Although there were no external narcotic effects of helium, an increase in electrical activity was noted on the EMG. The EMG is thus a reliable test for the early diagnosis of helium narcosis. Figures 3; References 12: 9 Russian, 3 Western.

USSR

UDC 612.85

DISCRIMINATION OF AMPLITUDE MODULATIONS IN SINGLE UNITS OF THE FROG AUDITORY SYSTEM

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian
Vol 63, No 1, Jan 77 signed to press 28 Jun 76 pp 150-153

BIBIKOV, N. G. and GORODETSKAYA, O. N., Moscow

[Abstract] The response of neurons of the torus semicircularis (a homologue of the tuberculum inferius of mammals) to amplitude modulated tones in the 5-300 hertz frequency range, depth of modulation of 5-80% and in the 5-50 decible range over the threshold of reaction was studied. Histograms were constructed after the data was processed on a EDS 34208 analyzer (Toshiba). The formula for the computations is given. The resulting summation vectors of the phase histograms are presented for a modulation depth of 10% and frequencies of 20, 40, 60, 80, 160, and 200 hertz. In the 20-80 hertz range the reaction is almost completely concentrated in one half wave of the modulation signal and r (the summation vector) exceeds 0.5. The level of the auditory system at which the discrimination of small changes in signal amplitude takes place is not now known. In contrast to previous studies, where a 10 hertz signal modulation leads to a 20-30% modulation in the phase histogram, here the

figure was 100%. It is hypothesized that in the transition from the cochlear nucleus to the tuberculum inferius there is an operation in the nervous system leading to a stress on small changes in the amplitude of the acoustic signal. This operation is assumed to involve a transition from a reaction to the envelope signal to a reaction to changes in time. Figures 2; References 10: 5 Russian, 5 Western.

USSR

UDC 576.35+633.111.1:631.52

DEVELOPMENT AND STUDY OF NEW SERIES MONOSOME LINES OF SPRING WHEAT

Minsk VESTSI AKADEMII NAVUK BSSR, SERYYA BIYALAGICHNYKH NAVUK in Belorussian No 1, 1977 pp 33-38

KHOTYLEVA, L. V., DYLENOK, L. A., KAMINSKAYA, L. N., and YATSEVICH, A. P., Institute of Genetics and Cytology, Academy of Sciences BSSR

[Abstract] Data on the study and use of Chinese Spring monosome lines of spring wheat. The influence of growing conditions and line genotype on the percentage of monosome plants and the progeny of different lines is studied. An attempt is made to explain the frequency of functioning of 20 chromosome male gametes. Using monosome analysis, chromosomes having a favorable influence on the development of various economically useful characteristics in the Pitik-62 variety are analyzed. Figure 1; Tables 5; References 3 (Western).

USSR

UDC 633.14:631.527:581.4+581.1:632.165

PHYSIOLOGICAL-BIOCHEMICAL CHARACTERISTICS OF RESISTANCE TO LODGING OF SOME VARIETIES OF WINTER WHEAT

Minsk VESTI AKADEMII NAVUK BSSR, SERYYA BIYALAGICHNYKH NAVUK in Belorussian No 1, 1977 pp 39-43

MINCHENKOVA, M. D. and SEMENOVA, N. YU., Institute of Experimental Botany imeni V. F. Kuprevich, Academy of Sciences BSSR

[Abstract] Using material from the department of winter rye selection at BNIIZ [Belorussian Scientific Research Institute of Crop Raising] a study is made of the morphological, physical-mechanical, and physical-biochemical indicators characterizing plant resistance to lodging. The work was conducted with Khar'kovskaya 60 (standard), Kombayninyay, Karsten, and hybrid Karsten x Kombayninyay varieties. The differences characterizing vertical resistance of the varieties were determined. Good mechanical properties of stalks were noted in the Kombayninyay variety. The stalks of the Karsten x Kombayninyay hybrid and karsten varieties had lower resistance indicators than standard. Tables 4; References 17 (Russian).

(54) A METHOD FOR INCREASING THE FERTILITY OF AUTOTETRAPLOIDS

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 6 (11) 535054 (21) 2150043/30-15 (22) 30.06.75 2(51) A 01 H 1/100

(72) CHUVASHINA, N. P. (71) Central Order of the Labor Red Banner Genetic Laboratory imeni I. V. Michurin

[Text] A method for increasing the fertility of autotetraploids, including transfer of the initial material to the tetraploid level by means of mutagens, distinguished by the fact that with the aim of impairment of the chromosome homology among autotetraploids via natural locus exchange and the intensification of bivalent conjugation, tetraploids obtained from the colchicinization of diploid seedlings of pure species and seedlings from the seed generation of the allotriploid form are taken as the initial pairs for crossing.

USSR/GHANA

UDC 614.1:312(667)

SOCIAL ASPECTS OF DEMOGRAPHIC PROCESSES IN THE REPUBLIC OF GHANA (BASED ON MATERIALS OF A SOCIOLOGICAL SAMPLE STUDY)

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 2, 1977 pp 38-41

FORJUR, JOSEPH, (of the Republic of Ghana), Department of Social Hygiene and Organization of Public Health, L'vov Medical Institute

[Abstract] In 1975, using a specially developed map, the authors performed a sociological sampling study of 700 families in two cities and 800 families in 4 villages typical for the Republic of Ghana. Statistical analysis of the data produced provide a description of the basic social and hygienic factors influencing the formation of the demographic situation in the country. Information is presented on the population, mean annual income per unit of population, housing conditions, diet, literacy, birth rate and population increase, causes of death, including infant mortality, plus a commentary on the "severe aftereffects of English colonialism."

USSR

UDC 614.2.003.1

ECONOMIC ASPECTS OF THE EFFECTIVENESS OF PUBLIC HEALTH

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 2, 1977 pp 3-8

SERGEYEV, A. V., First Deputy Minister of Health, RSFSR

[Abstract] The 25th CPSU Congress has set forth great tasks in the area of the economic and social-cultural development of the Soviet Union. The great economic significance of public health in the achievement of these tasks is made more difficult by the unfavorable demographic results of the Second World War, which will greatly reduce the labor supply of the Soviet Union in the 1980's. The public health organizations of today have the material, hardware and personnel to organize the preventive health and therapeutic care of the population, but needs to utilize these resources better and more effectively. Statistics are presented concerning the resources available for public health. In particular, a significant shortage of doctors is felt, and at today's rates of physician training and retirement, it would take as much as 20 years to alleviate this shortage, a situation clearly intolerable. Another example cited is the inefficient utilization of hospital beds, so that even though the RSFSR has very nearly the planned number of hospital beds (13.5 per 1000 population) called for by the Ministry of Health and State Planning Commission, their use is not efficient (319 days per year as against 340). The state should consider the cost-effectiveness of various measures which might be taken to improve the efficiency of utilization of personnel and equipment to improve health services provided to the population.

USE OF THE MINNESOTA CODE TO ANALYZE THE EKG DURING ERGOMETRY

Moscow SOVETSKAYA MEDITSINA in Russian No 1, 1977 signed to press 6 Sep 76
pp 16-21

POMERANTSEV, V. P., MARTYNOV, A. I., VERTKIN, A. L., ZADIONCHENKO, V. S.,
MDINARADZE, YU. S., IVASHCHUK, A. G., PROKHOROVICH, YE. A., MIKHEYEV, A. I.,
ANDREYEV, V. M., and KHOMENKO, V. L., Moscow Medical Stomatological Institute
imeni N. A. Semashko

[Abstract] The Minnesota code was used to analyze EKG changes in 1160 persons in relation to the main results of ergometry, clinical findings, and risk factors in ischemic heart disease. The subjects, age 19 to 66 years, included both healthy individuals and those suffering from hypertension, chronic pyelonephritis, and ischemic heart disease. Coded EKG changes were found in 551 (47%) persons at rest, mainly those suffering from hypertension and ischemic heart disease. Such changes were absent on the resting EKG of the other 609 patients, although 117 showed the characteristic signs of angina attacks. Other patients exhibited low tolerance for physical exercise as well as symptoms of atherosclerosis. A distinct relationship was found between the EKG changes and ischemic heart disease risk factors. An increase in number of factors was paralleled by an increase in pathological EKG changes both at rest and during exercise. There was also a decrease in the number of patients showing no coded EKG changes. The Minnesota code was of little value in detecting myocardial hypertrophy. Table 1; References 19: 11 Russian, 8 Western.

USSR

UDC 615.849.1.015.25:547.857.4

HALOGENATED ANALOGS OF CAFFEINE AS POTENTIAL RADIOSENSITIZING AGENTS

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian No 2, 1977 signed to press 1 Jun 76
pp 29-31

VARTANYAN, L. P., RUSANOV, A. M., KOLESOVA, M. B. and KRUTOVSKIKH, G. N.,
Central Scientific Research X-Ray and Radiological Institute of the Ministry
of Health USSR, Leningrad

[Abstract] A recently discovered property of caffeine is inhibition of the processes of reparation in irradiated cells and intensification of the radiation injury of various biological objects. Three halogenated caffeine derivatives were studied: 8-chlorocaffeine, 8-iodocaffeine, and 8-bromocaffeine (also known as xanthobin). The experiments were conducted on ascitic and solid tumors of mice and rats. Attention was devoted primarily to xanthobin, which manifested the greatest effectiveness. Xanthobin, as well as the other two agents, possesses no antitumor activity, but in combination with X-ray irradiation it brings about a rise in the radiosensitivity of a number of enumerated experimental neoplasms. The radiosensitizing action of xanthobin is expressed in intensification of the inhibitory influence of radiation upon tumor growth, as well as in an increase in the longevity of the experimental animals, in comparison to control animals subjected to irradiation alone. A distinguishing feature of xanthobin, as well as of the other investigated compounds, is the high selectivity of the radiosensitizing effect, so that xanthobin does not alter the radioresistivity of normal, nontumorous tissue and does not intensify the undesirable side effects of irradiation. Halogenated analogs of caffeine are capable of potentiating the antitumorogenic action of X-ray radiation not only when administered prior to irradiation, but after irradiation as well. Since these compounds totally lack antitumorogenic activity, the above phenomenon may be regarded as indirect proof of inhibition of the postradiation reparation of tumor cells by the preparations. Table 1.

USSR

UDC 362.121:616.12-002.77

EFFECTIVENESS OF THE ACTIVITY OF THE CARDIORHEUMATOLOGIC DEPARTMENTS OF POLYCLINICS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 2, 1977 pp 8-13

MINDLIN, YA. S. and KRAYEVA, G. K., Department of Social Hygiene and Organization of Public Health, First Moscow Medical Institute

[Abstract] Results are presented from a study performed of the activity of cardiorheumatologic departments of polyclinics. The study was performed on a sample of 30 polyclinics serving the mature population of six rayons of Moscow. Sixteen of the polyclinics had cardiorheumatologic departments, 14 did not. All cases of primary diagnosis of rheumatism in 1968-1969 were studied, a total of 741. The combined method used, including selection of medical documents for 1 patient, expert evaluation, questionnaires, etc., allowed comparative analysis of the organization and quality of medical assistance provided these patients with specialized and general therapeutic systems, based on the criteria of quality of accounting for patients, quality of diagnosis, organization of prophylactic dispensary observation and evaluation of its effectiveness in the polyclinic stage. The relationship between some of the social conditions of the life of the patient and the course of the disease was also studied. The study revealed that one of the primary conditions of rheumatism treatment, obligatory registration and accounting for cases detected, was not always met, particularly in polyclinics without cardiorheumatologic departments. The accuracy of diagnosis and effectiveness of treatment of the disease were also found to be higher in polyclinics with specialized departments. Thus, in spite of some shortcomings such as ineffective use of laboratory and other studies and insufficient utilization of such measures as changes in job assignment and visits to health resorts, polyclinics with specialized cardiorheumatologic departments clearly provide better care for patients with rheumatism. Tables 2.

USSR

UDC 616-089.3

(54) A METHOD OF TRACHEOTOMY

Moscow OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYYE OBRAZTSY, TOVARNYYE ZNAKI in Russian No 42, 1976 p 13 (11) 535083 (21) 1764139/28-13 (22) 27.03.72 2(51) A 61 B 17/00

(72) FERKEL'MAN, L. A., LUBE, V. M. and KAMENTSEV, A. S. (71) Rostov State Medical Institute and Rostov Oblast Hospital

[Text] A method of tracheotomy via dissection of the skin, the subcutaneous cellular tissue, and the front wall of the trachea, distinguished by the fact that with the aim of decreasing traumatization and preventing complications, a single-moment puncture of all the tissue layers and the front wall

of the trachea, as a single unit, is made by means of an ultrasonic wave guide at the point of introduction of the tracheotomic tube.

USSR

UDC 616.12-008.331.1-057:796.071]-085.217.24

USE OF BETA-ADRENOBLOCKING AGENTS TO TREAT ATHLETES WITH ARTERIAL HYPERTENSION

Moscow SOVETSKAYA MEDITSINA in Russian No 1, 1977 signed to press 29 Dec 75
pp 22-26

MOSKALENKO, N. P., GLEZER, G. A., MEGRELISHVILI, R. I. and ZIL'BERT, N. L.,
Institute of Cardiology imeni A. L. Myasnikov, Academy of Medical Sciences
USSR

[Abstract] Study of cardiovascular functions in 35 athletes (long-distance runners, rowers, swimmers, and speed skaters) with stage 1 hypertension revealed much higher absolute values of blood pressure, heart rate, cardiac output, and contractility compared to healthy athletes and healthy untrained persons at rest, in the orthostatic test, and during exercise. Treatment with propranolol (80 to 160 mg daily) resulted in a lowering of blood pressure, decrease in the cardiac index, and some increase in peripheral resistance to the blood flow in the hypertensive athletes at rest. In the orthostatic test and during exercise, the cardiovascular reaction became more "economical," scarcely differing from that in the healthy athletes. Gas exchange was also improved by propranolol treatment: oxygen consumption and oxygen debt decreased while the efficiency of work and recuperation factor increased. Blood lactic acid levels fell sharply. References 13: 4 Russian, 9 Western.

USSR

UDC 591.3

EFFECT OF SODIUM SELENITE AND IMPROVED FEEDING ON THE GROWTH OF SHEEP EMBRYOS

Baku IZVESTIYA AKAD. NAUK AZERBAYDZHAN SSR, BIOLOGICHESKIYE NAUKI in Russian
No 5, 1976 pp 62-65

AKHMEDOV, N. M. and NADZHAFOV, D. A.

[Abstract] One group of Balbass sheep was injected with 0.1% sodium selenite (0.1 ml/kg of live weight) on day 10 of pregnancy and with 0.15 mg/kg on day 15, another was maintained on an enriched diet while a third group (controls) was given the usual rations. Embryos obtained from ewes of groups 1 and 2 were found to be heavier and larger on days 30, 45, 60, and 75 of pregnancy than the controls. Thus, sodium selenite and augmented diet had a stimulatory effect on the growth of sheep embryos. The experimental embryos were superior to the controls in weight and various body measurements (height at the crest, depth of the chest, length of the head, etc.). Table 1; References 13: 9 Russian, 4 Western.

II. BEHAVIORAL SCIENCES
Physiological Psychology

USSR/GDR

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PROBLEMS OF STRESS GENETICS: REPORT III. DIFFERENTIAL INFLUENCE OF STRESS
FERTILITY OF MICE OF DIFFERENT GENOTYPES

Moscow GENETIKA in Russian Vol 13, No 1, Jan 77 signed to press 26 Jan 76
pp 52-58

BELYAYEV, D. K., SCHUELER, L., and BORODIN, P. M., Institute of Cytology and Genetics, Siberian Department, Academy of Sciences USSR; Novosibirsk, and Scientific Research Center of Animal Husbandry, Academy of Agricultural Sciences GDR, Dummerdorf-Rostock

[Abstract] With a view to determining the impact of stress in large scale animal husbandry complexes, mice were subjected to stress in order to reveal differences in fertility. Continuing two previous reports in the same journal, this study analyzes the effect of chronic stress on the duration of pregnancy and reproductive characteristics in the following lines of mice: BALB/c, CZN/Ne, C57BL/6, AKR/j. Each experimental animal was kept in a 6x8x3.5 c.m cage in order to imitate conditions in a modern animal husbandry complex. Twenty one days after giving birth the females were killed and the implantation sites were counted. In the control group 14.1% of the mice did not reproduce while in the experimental group the figure was 29.4%. In the hybrids the increase in sterility as a result of stress was lower than for inbreds, the figures were 11.4 and 27.3% respectively. Interline hybrids of mice had the greatest resistance to immobilization stress. Female mice from emotionally reactive strains had higher preimplantation losses, and the progeny from the least emotionally reactive strain (C57P1/6) had lower losses. The litter size of the latter was larger. Tables give the following data: characteristics of mice fertility; characteristics of fertility in control and stressed group; evaluation of effects of general combining ability on mice lines. Tables 3; References 10: 5 Russian, 5 Western.

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