

ACC NR: AP6032408

for the temperature at which the glass was stored between the irradiation and the measurement. Comparison with the results of a nonstationary calorimeter showed that the dosimetry with the aid of SGD-8 glass is accurate within 10%. It is concluded that SGD-8 glass can serve as a universal dosimeter for  $\gamma$  radiation dosimetry with different sources, including reactors. Orig. art. has: 2 figures and 1 formula.

SUB CODE: 18, 20/ SUBM DATE: 22Feb66/ ORIG REF: 002

Card 2/2

SHAROYKO, V. S., Cand Tech Sci -- (diss) "Problem of the comfortableness of the ride on railroads." Leningrad, 1960. 19 pp; (Leningrad Order of Lenin Inst of Railroad Transport Engineers in Academician V. N. Obraztsov); 150 copies; price not given; (KL, 21-60, 126)

SHAROYKO, V.S., kand. tekhn. nauk

Selecting the shape of the switch curve in switch systems for  
high-speed traffic. Sbor. trud. LIIZHT no.188:151-166 '62.  
(MIRA 16:7)

(Railroads--Switches)

SHAROYKO, V.S., kand. tekhn. nauk

Problems of comfortable riding at high train speeds. Sbor. trud.  
LIIZHT no.191:133-135 '63. (MIRA 16:12)

LYUTSAU, Aleksey Grigor'yevich; MER, N.I.; MERRO, Ye.M.; RYBIN, N.G.;  
ROZENVASSER, M.A.; SOLOV'YEV, S.N.; FILIMONOV, V.P.;  
SHAROYKO, V.V.; MEREZHKO, V.G., retsenzent; USENKO, L.A.,  
tekhn. red.

[On the road of great initiative] Po puti velikogo pochina.  
Moskva, Transzheldorizdat, 1961. 75 p. (MIRA 15:2)

1. Zamestitel' nachal'nika Glavnogo upravleniya lokomotivnogo  
khozyaystva Ministerstva putey soobshcheniya (for Merezhko).  
(Railroads--Employees--Labor productivity)

SHAROYKO, Ye.A.

PD-3 pressure core barrel. Dokl. AN Arm. SSR 24 no.2:26 '57.  
(MIRA 10:4)

1. Starshiy inzhener po izobretatel'stvu ob'yedineniya Ukrneft'.  
(Boring machinery)

SHAROYKO, Ye. A.

SHAROYKO, Ye. A.: "Some problems of preserving sunflower seed". Moscow, 1955.  
Moscow Order of Lenin Agricultural Academy imeni K.A. Timiryazev.  
(Dissertations for the Degree of Candidate of Agricultural Sciences).

SO: Knizhnaya letopis' No 44, 29 October 1955. Moscow.

SHAROYKO, Ye.A., kand.sel'skokhozyaystvennykh nauk.

Graph to determine the possibility of ventilating sunflower seeds.  
Masl.-shir. prom. 23 no.9:14-16 '57. (MIRA 10:12)

1.Sel'skokhozyaystvennaya akademiya imeni K.A. Timiryazeva.  
(Sunflower seeds--Storage)



SHARPALOV, Yu.

Introduction and adoption of quick freezing plants by the  
poultry and meat combines of the Krasnodar Territory.  
Khol. tekhn. 37 no. 6:54-56 N-D '60. (MIRA 13:12)  
(Krasnodar Territory--Cold storage warehouses)

SHARPAN', A. S.  
Effects of Radiation

Dissertation: "The Effects of the Functional Condition of the Central Nervous System on the Development of Ultraviolet Erythema." Dr Med Sci, Second Moscow Medical Inst imeni I. V. Stalin, 12 Apr 54. (Meditsinskiy Rabotnik Moscow, 30 Mar 54)

SO:SUM 213, 20 Sep 1954

SHARPAN', A.S.

Effect of the functional state of the central nervous system on the development of ultraviolet erythema. Vop.kur.fizioter.i lach.fiz.kul't no.2:85 Ap-Je '55. (MLRA 8:8)

1. Dissertatsiya na soiskaniye uchenoy stepeni kandidata meditsinskikh nauk. Vypolnena Nauchno-issledovatel'skom institute fizioterapii Ministerstva zdravookhraneniya RSFSR (rukovoditel' prof. A.N. Obrosoy) Zashchishchena v aprele 1954 g. vo II Moskovskom meditsinskom institute.

(ERYTHEMA, experimental,  
ultraviolet erythema eff. of anesth. on develop.)  
(ULTRAVIOLET RAYS, effects,  
exper.erythema in man, eff. of anesht. on develop.  
(ANESTHESIA,  
eff. on ultraviolet erythema in man)

REVENKO, G.P., meditsinskaya sestra; SHARPAN', A.S., kand.med.nauk (Moskva);  
NOVIKOV, I.M. (Stalino)

Nurses' councils. Med.sestra 18 no.10;46-48 0 '59. (MIRA 13:1)  
(NURSES AND NURSING)

TIKHONOVA, A.M.; SHARPAN', A.S.

Letter to the editor. Vop.kur., fizioter.i lech.fiz.kul't. 27  
no.2:174 Mr-Ap '62. (MIRA 15:11)

(RADIATION SICKNESS)

SHARPATAYA, G.A.; SOKOLOV, V.A.

Specific heat of palladium tetramine chloride over a temperature  
range of 105 to 290°K. Zhur.neorg.khim. 10 no.4:992-993 Ap '65.  
(MIRA 18:6)

SOKOLOV, V.A.; SHARPATAYA, G.A.

Calorimeter of small volume for determining the heat capacity  
at low temperatures. Heat capacity of potassium chloride.  
Zhur. neorg. khim. 9 no.7:1542-1546 J1 '64. (MIRA 17:9)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.  
Kurnakova AN SSSR.

KIM KHON SIL; ZIMIN, A.V.; SHARPATY, V.A.

Radiation-chemical synthesis of ethylene glycol and formaldehyde  
from methanol. Khim.prom. no.7:492-495 J1 '63. (MIRA 16:11)



SHARPATYY, V. A.

in collection of articles.-  
 Effect of Ionizing Radiation (~~Santa~~) on Inorganid~~7~~ and Organic Systems, Moscow, 1958, Izd-vo  
 AN SSSR, 416pp (most works a continuation of Sb rabot po radiat. Khim, 1955)

Sharpatyy, V.A., Orekhov, V.D., Proskurin, M.A. Sensitization of the  
 Radiolytic Conversion of Sodium Nitrate in Aqueous Alkaline Solutions 37

The subject of this paper is the effect of the temperature of the solution on the yield of radiolytic conversion of nitrate in aqueous alkaline solutions at temperatures from 20° to 90°. The same process was studied with glycerin as acceptor of OH radicals. An increase from 20° to 40° in 1M NaNO<sub>3</sub> / 1M KOH causes a sharp increase of the nitrate yield: from ~ 3.0 to ~ 6.5 equiv./100ev. The increase in yield reaches its limit value at 80° and equals about 8 equiv./100ev. The sensitizing effect of glycerin is apparent only when its concentration is ~ 5.10<sup>-4</sup> M and remains constant for concentrations up to 10<sup>-3</sup> M. The presence of molecular oxygen (air) inhibits this effect. There are 5 figures and 10 references, of which 6 are Soviet and 4 English.

Sharpatyy, V.A., Orekhov, V.D., Proskurin, M.A. Radiolytic Reduction of  
 Sodium Nitrate in Concentrated Aqueous Solutions 43

This paper considers the radiolytic reduction of nitrate solutions in a wide range of concentrations. Concentrations of NaNO<sub>3</sub> above 1M in the presence of an inert gas (nitrogen) resulted in a yield of 8 to 9 equiv/100ev NO<sub>2</sub><sup>-</sup>. It was found that molecular oxygen inhibits the reduction process, which is evident in lower results as compared to the process in an inert atmosphere.

-Gard-6/31

KOCHARYAN, N.M.; KIRAKOSYAN, Z.A.; SHAROYAN, E.G.; PIKALOV, A.P.

Polarization of  $\mu^+$ -mesons in cosmic rays in the region of high energies. Zhur. eksp. i teor. fiz. 38 no.1:18-21 Jan '60. (MIRA 14:9)

1. Fizicheskiy institut Akademii nauk Armyanskoy SSR.  
(Mesons) (Cosmic rays)

OREKHOV, V. D., PROSKURNIN, M. A., SHARPATYY, V. A. and ZANSOKHOVA, A. A.

"Conjugate Oxidation-Reduction Reactions in the Radiolysis of Water Solutions"  
p.100

Trudy Transactions of the First Conference on Radioaction Chemistry, Moscow,  
Izd-vo AN SSSR, 1956. 330pp.  
Conference 25-30 March 1957, Moscow

AUTHORS: ~~Sharpaty, V. A.~~, Zansokhova, A. A., ~~SOV/76-32-7-41/45~~  
Orekhov, V. D.

TITLE: The Action of  $\gamma$ -Radiation on the Aqueous Solutions of Ammonia and Sodium Nitrate (Deystviye  $\gamma$ -izlucheniya na vodnyye rastvory ammiaka i nitrata natriya)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 7,  
pp 1686 - 1687 (USSR)

ABSTRACT: The investigations carried out by Rigg, Scholes and Weiss (Ref 1) showed that in an x-ray irradiation of aqueous ammonia solution saturated with oxygen an oxidation of the  $\text{NH}_3$  takes place; no hydrazine or hydroxylamine formation was found, for which reason a direct participation of oxygen in the reaction was assumed. In the present paper this oxidation mechanism is investigated with nitrate ion and molecular oxygen having been used as acceptor and  $\text{Co}^{60}$  as  $\gamma$ -source. The solutions were saturated with oxygen or an inert gas, and the method of irradiation as well as the method of analysis were carried out as already described. From the experimental results obtained

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the authors concluded that the molecular oxygen in the solution

The Action of  $\gamma$ -Radiation on the Aqueous Solutions  
of Ammonia and Sodium Nitrate

SOV/76-32-7-41/45

does not take part directly in the oxidation of ammonia, but that it only sensitizes the reaction as acceptor of the H-atoms, similar to the nitrate ion. The influence exerted by the oxygen on the yield of  $\text{NO}_2^-$  observed in the case of high pH values is explained by its inhibiting effect on the reduction of the nitrate ion. The reducing component of the water radiolysis in the oxidation of ammonia in the presence of nitrate ions is represented according to the equation  $9\text{H} + 4,5\text{NO}_3^- = 4,5\text{NO}_2^- + 4,5\text{H}_2\text{O}$ . Finally the authors thank M.A. Proskurnin. There are 1 figure and 3 references, 2 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im.L.Ya.Karpova, Moskva (Moscow, Physicochemical Institute imeni L.Ya.Karpov)

SUBMITTED: December 9, 1957  
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The Action of  $\gamma$ -Radiation on the Aqueous Solutions  
of Ammonia and Sodium Nitrate

SOV/76-32-7-41/45

1. Ammonia solutions--Effects of radiation
2. Sodium nitrate solutions--Effects of radiation
3. Gamma rays--Chemical effects

Card 3/3

5(4)

AUTHORS:

Sharpatyy, V. A., Orekhov, V. D.,  
Proskurnin, M. A.

SOV/20-122-5-29/56

TITLE:

The Influence of the Concentration of Sodium Nitrate in Aqueous Solutions on the Degree of Its Radiolytic Conversion (Vliyaniye kontsentratsii nitrata natriya v vodnom rastvore na stepen' yego radioliticheskogo prevrashcheniya)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 5, pp 852 - 854 (USSR)

ABSTRACT:

The authors investigated the dependence of the accumulation of sodium nitrite in basic sodium nitrate solutions (pH=14) on the concentration of the latter (from  $10^{-7}$  to 6m). The curve of the dependence of  $G_{NO_2^-}$  on  $[NaNO_3]$  has two clearly distinguishable domains: In the interval of  $NaNO_3$ -concentrations of from  $10^{-7}$  to  $5 \cdot 10^{-4}$  m,  $G_{NO_2^-}$  increases with an increasing content of nitrate ions in the solution and attains a certain constant value

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The Influence of the Concentration of Sodium Nitrate in Aqueous Solutions on the Degree of Its Radiolytic Conversion SOV/20-122-5-29/56

( $\sim 4.3$  equ./100 eV) within the range of sodium nitrate concentrations of from  $5 \cdot 10^{-4}$  to  $10^{-2}$  m. In highly concentrated solutions of sodium nitrate  $G_{\text{HO}_2^-}$  increases further, viz. proportionally to the logarithm of the concentration of  $\text{NaNO}_3$ . At concentrations of 1 m and more,  $G_{\text{HO}_2^-}$  remains constant ( $\sim 9$  equ./100 eV). The introduction of glycerin [ $10^{-3}$  m] with irradiation conditions otherwise being equal, the dependence of  $G_{\text{HO}_2^-}$  on  $[\text{NaNO}_3]$  does not vary in the initial range of the curve (up to  $\text{NaNO}_3$ -concentrations of  $5 \cdot 10^{-4}$  m). However, the presence of glycerin in the solution shortens the flat part of the curve. A comparison of the yield of gaseous products in 1 m solutions of sodium nitrate without and with glycerin shows the following:  $G_{\text{H}_2}$  decreases from 0.06 mol/100 eV to 0.04 mol/100 eV, and the oxygen yield decreases from 0.40 to 0. The experimental data given here

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The Influence of the Concentration of Sodium Nitrate in Aqueous Solutions on the Degree of Its Radiolytic Conversion SOV/20-122-5-29/56

agree well with the hypotheses on the course taken by conjugated reactions of the oxidation of glycerin and the reduction of sodium nitrate in aqueous solutions; they also confirm the possibility of an additional introduction of H- and OH-radicals into the reactions of the reduction of the nitrate and the oxidation of glycerin. The here discussed method for varying the concentration of the dissolved substance ( $\text{NaNO}_2$ ) and the introduction of a conjugated acceptor (glycerin) permit delimitation of the conditions of radiolysis at which the effect produced by the ionized and excited water molecules becomes noticeable. There are 1 figure and 8 references, 4 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Scientific Research Institute imeni L. Ya. Karpov)

Card 3/4

SHARPATY, V. A.

PHASE I BOOK EXPLOITATION SOV/A396

Moscow. Fiziko-Khimiicheskiy Institut  
Problemy fizicheskoy khimii; trudy, vyp. 2 (Problems in Physical  
Chemistry) Translations of the Institute, no. 2). Moscow,  
Goskhimizdat, 1959. 202 p. 1,000 copies printed.

Biblioteka Board: Ya. N. Varkhavskiy, Doctor of Chemical Sciences;  
O. S. Zhdanov, Doctor of Chemical Sciences; V. A. Kargin,  
Academiyan; Ye. M. Kolobaykin, Doctor of Chemical Sciences  
(Resp. Ed.); S. S. Medvedev, Akademiyan; S. Ya. Panchenko,  
Doctor of Chemical Sciences; V. M. Chernobitov; Candidate  
of Chemical Sciences; V. S. Chernalov (Editorial Secretary);  
Ed.: Ye. G. Smpak.

PURPOSE: This collection of articles is intended for physical  
chemists.

CONTENTS: The collection is the second issue of the Transactions  
of the Scientific Research Institute of Physical Chemistry  
Imeni L. Ya. Karpov. It contains 17 articles which review  
Card 1/5

Tsvetkov, M. I., N. M. Korotkov, V. M. Fainer (Deceased), L. O.  
Agol'baum, V. I. Lukyanova, and V. A. Demidchenko. The Oxidation  
of Anisole over a Molybdenum Catalyst 14

Zhukovskiy, S. Ya., S. A. Kuznetsova, Ya. I. Gorbunov,  
V. I. Kuznetsov, R. N. Kuznetsov, N. N. Kuznetsov, A. G. Gorbunov,  
V. I. Kuznetsov, N. A. Slavutskiy, V. I. Gorbunov, A. G. Gorbunov,  
Kinetics of Decomposition, and the Explosion of GEMM 27  
Borikuchi, Juno (Japan). How to Find the Kinetic Equation  
of a Reversible Reaction 39

Kolobaykin, Ya. M. The Effect of the Specific Adsorption of  
Anions on the Kinetics of Hydrogen Production and the Structure  
of the Metal-Solution Boundary 50

Vashtarovskiy, Ye. M. The Nature and Mechanism of Electro-  
philic Hydrogen Exchange 61

Zyabkina, Z. V. Crystallochemical Data on the Nature of  
the Nuclear Effect of Atoms 97

Kozlovskiy, A. I. Investigation of the Effect of Inter-  
molecular Interaction on the Ultraviolet Absorption Spectra  
of Acyclic Compounds 107

Smolina, Ye. I., V. S. Akseyev and B. P. Ormont. Inverti-  
sation of Equilibrium in the System Nitrogen-Nitrogen at  
High Temperatures and the Dependence of the Free Energy  
of Adsorption on Its Composition and Structure 218

Birker, A. D., M. A. Parshovskiy, L. A. Dulitskiy, I. L.  
Suntzina and Yu. S. Ryabov. Study of the Field of Forces  
of Doses from a Cylindrical Irradiator with Co<sup>60</sup> as a Power-  
ful Source of  $\gamma$  Radiation 132

Polozov, V. K., B. G. Vasil'yev and N. N. Tunkil'skiy. Study  
of the Ionization and Dissociation of n-Octane and n-Nonane  
Molecules by the Method of Bombardment with Quasi-  
Monochromatic Electrons 146

Babitskiy, A. S. Radiation-Chemical Effects in Solid  
Inorganic Salts 163

Rukhlovskiy, M. P., A. V. Zin'ko, and B. V. Dzhagat'skiy. Radiation-  
Chemical Chlorination of Benzene 169

Proskurnin, M. A., Ye. V. Barabko, and L. I. Kuznetsova.  
Course of the Process of Benzene Oxidation in an Aqueous  
Solution Under the Action of Radiation 177

Kuznetsov, V. I. (Zacheposlovskiy), Ye. V. Barabko, L. I.  
Kuznetsova, P. N. Komarov, and M. A. Proskurnin. The  
Composition Products of Phenol Formed During the Radiolysis  
of Benzene in an Aqueous Solution 183

SHARPATY, V. A., and G. A. Gorbunov. The Problem of the  
Phase Composition of the System H<sub>2</sub>O-NaNO<sub>3</sub>-NaOH at Low  
Temperatures 189

Gorbunov, V. D., and A. A. Zarnochkova. Sematization of the  
Radiolytic Oxidation of Laccosol Dyes 194

SHARFATYY, V.A.; GOL'DER, G.A.

Phase composition of the system  $H_2O - NaNO_3 - NaOH$  at low temperatures. Probl.fiz.khim. no.2:189-193 '59.  
(MIRA 13:7)

1. Laboratoriya radiatsionnoy khimii Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta imeni L.Ya.Karpova.  
(Sodium nitrate) (Sodium hydroxide)

SHARPATYY, V. A. and OREKHOV, V. D.

c "On the Radiolytic Reduction of Aqueous Sodium Nitrate Solutions Saturated with Hydrogen." Nukleonika, vol. 4, No. 5, 1959., (Polska Akad Nauk)

The radiolytic reduction of the nitrate-ions in the hydrogen and nitrogen saturated aqueous solutions has been investigated over the wide range of pH (1 to 14). It has been found that under this conditions the nitrite yields are independent of the dissolved gas nature ( $N_2$  or  $H_2$ ). On this basis it is suggested that the reaction  $H_2 + OH \rightarrow H + H_2O$ , plays no marked role in the studied process occurrence.

Fiziko-khimicheskiy Institut im. L. Ya. Karpov, Moskva.

SOV/20-124-6-27/55

5(4)

AUTHORS:

Sharpatyy, V. A., Orekhov, V. D., Proskurnin, M. A.

TITLE:

On the Character and the Role of Intermediate Products in the Radiolytic Reduction of a Nitrate (O kharaktere i roli promezhutochnykh produktov pri radioliticheskom vosstanovlenii nitrata)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 6, pp 1279 - 1281 (USSR)

ABSTRACT:

The authors investigated the dependence of the nitrite yield on the dose rate in a 1 m solution of nitrite and in a 1 m solution of NaOH in the case of dose rates of 1000 r/sec. In air-saturated solutions the nitrite yield remains constant within the entire interval of dose rates; it amounts to  $\sim 3$  equivalents/100 ev. In the case of lacking oxygen (the solution is saturated with nitrogen), the nitrite yield within the range of dose rates of 0.5 - 1000 r/sec is considerably greater ( $\sim 8$  equivalents/100 ev). With an oxygen content of 2.5% in an oxygen-nitrogen mixture above the solution,  $G_{NO_2}$  is directly

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proportional to the logarithm of the dose rate. These results are an indirect confirmation of the hypothesis on the congruence

On the Character and the Role of Intermediate Products SOV/20\_124-6-27/55  
in the Radiolytic Reduction of a Nitrate

of the disproportionation of the ion of nitric acid and its oxidation to a nitrate-ion by oxygen. For the purpose of explaining the influence exercised by intermediate products on the reduction of nitrate several experiments were carried out concerning the irradiation of solutions at different temperatures. A temperature variation (within the temperature interval of 20 - 90°) apparently exercises only little influence on the formation of the final products  $\text{NO}_3^-$  and  $\text{NO}_2^-$  according to the disproportionation reactions ( $G_{\text{NO}_2} = 8-8.5$  equivalents/100ev).

Irradiation of the solutions at low temperatures (down to -25°) reduces  $G_{\text{NO}_2}$  to  $\sim 2.5$  equivalents/100 ev. In the case of a

further reduction of the temperature of the solution down to the temperature of liquid nitrogen  $G_{\text{NO}_2}$  remains practically

constant. In oxygenous solutions (which are saturated with air) decrease of the yield begins at high temperatures and is also due to the interaction between  $\text{O}_2$  and the intermediate products of the reduction of the nitrate. By applying paramagnetic

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On the Character and the Role of Intermediate Products in the Radiolytic Reduction of a Nitrate SOV/20-124-6-27/55

electron resonance to the system nitrate-water during irradiation with accelerated electrons it was possible to detect several radicals as intermediate products of nitrate reduction and also atomic hydrogen at temperatures of from  $-196$  to  $-70^{\circ}$ . As soon as irradiation is stopped, these intermediate products vanish quickly, i.e. they vanish all the more rapidly the higher the temperature of the solidified solution becomes. From the above the following conclusions may be drawn: 1) The main processes of the reduction of nitrate in the solidified solutions occur before thawing. Besides the direct action of  $\gamma$ -radiation upon  $\text{NO}_3^-$  a reduction of the nitrate by radicals occurs in the solidified solutions. Finally, the authors suggest a closer investigation of the properties of the intermediate products of the system by the method of paramagnetic resonance. The authors thank the collaborators of the Institut khimicheskoy fiziki (Institute of Chemical Physics) N. Ya. Buben, A. T. Koritskiy, Yu. N. Molin, and V. N. Shamshev for carrying out several experiments. There are 2 figures and 6 references, 5 of which are Soviet.

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On the Character and the Role of Intermediate Products in the Radiolytic Reduction of a Nitrate SOV/20\_124-6-27/55

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Scientific Research Institute imeni L. Ya. Karpov)

PRESENTED: November 11, 1958, by S. S. Medvedev, Academician

SUBMITTED: November 11, 1958

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5 (4) 5.4300, 5.4130

AUTHORS: Molin, Yu. N., Sharpatyy, V. A.,  
Buben, N. Ya.

66431  
SOV/20-128-6-36/63

TITLE: The Electron Paramagnetic Resonance Spectra and Kinetics of Accumulation of Radical Products Forming When Frozen Aqueous Solutions of Sodium Nitrate Are Bombarded With Fast Electrons

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1224 - 1227 (USSR)

ABSTRACT: By means of the apparatus described in reference 7 for the investigation of spectra of electron paramagnetic resonance (epr) the epr + spectra of frozen aqueous solutions of  $\text{NaNO}_3$  were photographed at  $-145^\circ\text{C}$  (Fig 1). The characteristics of the spectra of radicals I - IV are given in table 1. Radical I is identified as  $\text{NO}_2$ , radical II as the ion  $\text{HNO}_3^-$ . Radical III was observed in acid medium, radical IV in alkaline medium only. These two radicals are called nitrogen-free peroxide radicals, but they have not yet been clearly identified. Figure 2 shows the radical yield  $G_R$  as a function of the concentration of  $\text{NaNO}_3$ .

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It indicates that the reaction mechanism is not affected by the

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The Electron Paramagnetic Resonance Spectra and Kinetics SOV/20-128-6-36/63  
of Accumulation of Radical Products Forming When Frozen Aqueous  
Solutions of Sodium Nitrate Are Bombarded With Fast Electrons

concentration and that the indirect effect of the irradiation prevails in it. This is also confirmed by the difference between the epr spectrum of solid  $\text{NaNO}_3$  and that of its solution.

In order to clarify the role of the radicals in the formation of  $\text{NO}_2^-$  the yields  $G_R$  and  $G_{\text{NO}_2^-}$  are compared with each other in

table 2. The striking sensibilizing effect of the alkaline medium which can be found in this comparison needs further detailed investigation. The authors thank V. N. Shamshev and A. T. Koritskiy for their cooperation in the experiments, and V. V. Voyevodskiy, Corresponding Member of the AS USSR, Professor M. A. Proskurnin and V. D. Orekhov for valuable advice. There are 2 figures, 2 tables, and 18 references, 8 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemicophysics of the Academy of Sciences, USSR). Nauchno-issledovatel'skiy fiziko-khimicheskii institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov) 4

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The Electron Paramagnetic Resonance Spectra and Kinetics SOV/20-128-6-36/63  
of Accumulation of Radical Products Forming When Frozen Aqueous  
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PRESENTED: May 27, 1959, by V. N. Kondrat'yev, Academician 4

Card 3/3

SHARPATYY, V. A., Cand Chem Sci (diss) -- "The interaction of the nitrate ion with intermediate products of water radiolysis". Moscow, 1960. 19 pp  
(State Committee of the Council of Ministers USSR for Chem, Sci Res Phys-Chem Inst im L. Ya. Karpov), 150 copies (KL, No 14, 1960, 128)

PROSKURNIN, M.A.; SHARPATYY, V.A.

Intermediate products of the radiolysis of water. Zhur.fiz.khim.  
34 no.9:2126-2128 S '60. (MIRA 13:9)

1. Institut fizicheskoy khimii im. L.Ya.Karpova.  
(Radiation) (Water)

S/081/62/000/002/012/107  
B149/B102

AUTHORS: Sharpatyy, V. A., Molin, Yu. N

TITLE: Electron paramagnetic resonance spectra and kinetics of the accumulation of products formed during radiolysis of frozen aqueous solutions of sodium nitrate

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 79, abstract 2B563 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, 1959, v. I. Tashkent, AN UzSSR, 1961, 364 - 370)

TEXT: Data are presented which were obtained from studies of electron paramagnetic resonance spectra and kinetics of the accumulation of radiolytically produced radicals formed in frozen solutions of sodium nitrate on their irradiation with accelerated electrons under various conditions. In the process of radical formation, an indirect effect of radiation is the predominant mechanism. Data on the kinetics of accumulation of transition and of final products in the transformation of the system nitrate - water are correlated. [Abstracter's note: Complete translation.]  
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22140

S/074/61/030/005/001/001  
B103/B226

*26.1610 also 1207*  
AUTHOR: Sharpatyy, V. A.

TITLE: Problem of radiation chemistry of aqueous solutions

PERIODICAL: Uspekhi khimii, v. 30, no. 5, 1961, 645-678

TEXT: The author gives a survey of the development of radiation chemistry of aqueous solutions. He analyzes modern conceptions of the mechanism of radiolytic conversion and tries to give a uniform definition of radiolytic reactions. During more than 50 years, neither a uniform radiolysis theory of aqueous solutions could be developed, nor could the experimental data be explained. The radiation effect upon aqueous solutions is to be taken into consideration, because their radiolysis is similar to that of biological systems. The production of chemical dosimeters being both, "air-equivalent" and "tissue-like" is of importance. In chapter 1, the conceptions having been developed since 1901, are treated. Chapter 2 is devoted to the radical intermediates of water radiolysis. A. OH radicals as oxidative components of radiolysis. Since the OH radicals possess a

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J

Problem of radiation chemistry...

high affinity to the electron, they may appear as oxidizers. In this way, the radiolytic oxidation of halogen ions and many other inorganic and organic compounds is explained. Compared to strong oxidizers, the OH radical may show reducing properties due to formation and decomposition of intermediates of the peroxide type. B. Part played by H atoms in radiolytic reactions: There are reasons for the assumption that in hydrated state, the H-radical occurs as  $H_3O^+$ . The present experimental data are insufficient for the hypothetical reaction:  $OH + H_2 = H_2O + H + 11.6 \text{ kcal/mole}$  (7) or  $OH + CO = CO_2 + H + 21.2 \text{ kcal/mole}$  (15). The nature of the intermediates has as yet not been explained. C. The role of  $HO_2$  radicals. The  $HO_2$  radical cannot be identified by direct observation methods. It can either be dissociated in  $O_2^-$  and  $H^+$  or converted to  $H_2O_2$  and  $O_2$  by recombination. According to the pH value of the medium,  $H_2O_2$  may appear as an oxidizer or as a reducing agent. With an increasing pH value, the reducing effect of the  $HO_2$  radicals increases. The existence of H, OH, and  $HO_2$

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Problem of radiation chemistry...

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radicals has never been proved by direct experiments. The development of radiation chemistry demands a further study of intermediates by employing modern methods. 3) Ionized and excited water molecules in the radiation-chemical conversions of dissolved substances: A. Possibilities of the redistribution of the energy absorbed by the solution: 40% of the energy absorbed by the solution are consumed in ionization; 50% fall to the share of excitation. The limiting concentrations of the conversion products are attained the more quickly, the more reactive the substance is. The presence of a second radical acceptor has an effect upon the conversion yield of the first acceptor. The higher conversion yield occurring in concentrated solutions and in solutions of various substances, is explained by the effect produced by the excited products on the reactions. It might be possible to orientate the excitation energy of the solvent molecules such that the effect of radiation upon the dissolved substances increases. The excitation energy absorbed by the water molecules can be transferred to the dissolved substances in the following manner: 1) by a direct collision between excited water molecules and molecules of the dissolved substance; 2) by transferring an energy quantum; 3) by resonance transfer. X

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Problem of radiation chemistry...

V. V. Voyevodskiy's hypothesis (Kinetika i kataliz, 2, no. 1, 14 (1961)) is mentioned, according to which the transfer of excitation energy in aqueous solutions proceeds via the hydrogen bonds, or by following the mechanism of successive transfer of active particles. B. M.A. Proskurnin's conception on coupled radiation-chemical reactions (M. A. Proskurnin, V. D. Orekhov, Ye. V. Barelko, DAN, 103, 651, (1955)). According to this conception, H- and OH recombination in liquid phase can be inhibited by simultaneously using two coupled acceptors of H and OH. The researchers explain their results by various mechanisms differing from those of the coupled acceptors. These processes, however, can be reduced to a general scheme of coupled radiolytic reactions. This assumption is proved by the system  $Tl^+ - NO_3^- - Ce^{4+}$ . (T. J. Sworski, J. Am. Chem. Soc. 77, 4689 (1955)).

The system studied by Sworski may serve as an example for the effect of coupled acceptors of H atoms ( $Ce^{4+}$ ) and of OH radicals ( $Tl^+$ ). Maximum yields in radiolyzed water molecules have been obtained frequently with solutions of substances being energetic acceptors of both radicals (H and OH), as, e.g.,  $ON(SO_3)_2^{2-}$  or p, p'-disulfo- $\alpha$ - $\alpha$ , -diphenyl- $\beta$ -picryl-

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Problem of radiation chemistry...

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hydrazyl. C. Effect of two kinds of excited water molecules on the reactions. Since a maximum yield of one of the two radicals has been obtained also without a coupled acceptor, it is assumed that in aqueous solutions two types of excited water molecules are produced, differing from each other by level and kind of excitation. During the dissociation of the excited molecule, the radicals of type I may recombine with each other, as to react with the dissolved substance. In order that type II enters into reaction, either the presence of coupled radical acceptors or of an acceptor of both radicals is necessary. Type II of the excited water molecules might have a triplet structure. The yield of radical reaction products in the irradiation with gamma rays of  $Co^{60}$ , in the presence of a competitive acceptor, linearly depends on the cube root of concentration of this acceptor. The author assumes that in this case the rate of formation of the molecular product is dependent on the rate of the competitive process. The study of these dependences for the explanation of track reactions is very promising. Some conclusions are drawn: With increasing concentration of the radical acceptor, the reaction conditions of radical products are established: 1) from ionized; 2) from excited water molecules. As the radical products are differently distributed, the com-

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Problem of radiation chemistry...

S/074/61/030/005/001/001  
B103/B226

petition conditions of the H + Ak and H + H processes (Ak - acceptor) are changed. Mention is made of the nitrate - water system, the reduction mechanism of which remains unchanged in concentrations of 1 - 15.9 moles. The present experimental material cannot be unambiguously explained by the conceptions of several researchers. One of the basic problems is the explanation of the part of excited states played in the conversion processes due to radiation, as well as of the ways of transfer of absorbed energy between the molecules in solutions. Papers by the following Soviet researchers are mentioned: V. Yu. Filinovskiy, Yu. A. Chizmadzhev, Ts. I. Zalkind, V. I. Veselovskiy, V. N. Shubin, P. I. Dolin, A. A. Zansokhova. There are 2 tables and 257 references: 59 Soviet-bloc and 198 non-Soviet-bloc.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physico-chemical Institute imeni L. Ya. Karpov)

Card 6/6

5-4600

26336  
S/076/61/035/007/005/019  
B127/B102

AUTHORS: Sharpaty, V. A. and Molin, Yu. N.

TITLE: Electron paramagnetic resonance spectra and kinetics of accumulation of products formed during radiolysis of frozen aqueous sodium nitrate solutions

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 7, 1961, 1465-1473

TEXT: The authors studied the reactions taking place during radiolysis by means of an e.p.r. spectrometer, using dose rates between  $3 \cdot 10^3$ - $3 \cdot 10^6$  r/sec.

$Co^{60}$  with an activity from 30 to 18,000 g-eq. Ra was used as emitter. In order to identify the resonance lines and to study the mechanism of radiolysis the radiolysis of sodium nitrate with admixtures of oxygen, glycerol, ethanol and other alkaline salts was also studied. The working temperature was  $-145^{\circ}C$ . The spectra did not change with changing concentration of the nitrate solution ( $2 \cdot 10^{-3}$ -5M). At this temperature the mobility of the radicals formed from water is high enough to enable them to react with the solutes. The radicals formed in radiolysis are stable. In alkaline and

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B127/B102

Electron paramagnetic resonance ...

neutral solutions at least three radicals were detected. Radicals I and II are formed from  $\text{NO}_3^-$ . (Radical I:  $\text{NO}_2^\cdot$ . Radical II:  $\text{HNO}_3^\cdot$ .) Substitution of H by D decreases the width of the line of II. An interaction of the unpaired electrons of II with the surrounding protons apparently affects the line width. The line of II disappears in acid solution; it is not observed in solutions with  $\text{NO}_2^-$ . A line observed having triplet structure could not be identified with certainty but is assigned to  $\text{NO}_2$ . In neutral and acid  $\text{NaNO}_3$

solutions the spectrum of a radical IV was observed. The line of the radical V is only found in alkaline solutions. IV is assumed to be a peroxide radical formed from:  $\text{NO}_3^- + \text{OH}^- \rightarrow \text{HON}(\text{OO}^\cdot)\text{O}^-$ . OH is taken from the water.

The broad line of V might be indicative of hydrated  $\text{O}_2^\cdot$ . IV disappears when ethanol or glycerol are added to the sodium nitrate solution. A single line with a g-factor of 2.04 appears in the presence of  $\text{O}_2$  in  $\text{NaNO}_2$ :

$\text{H} + \text{O}_2 = \text{HO}_2$ . In neutral medium this radical will react with the solutes,

in alkaline solution the following reaction will take place:

$\text{HO}_2 + \text{OH}^- = \text{O}_2^\cdot + \text{H}_2\text{O}$ . In view of the lack of experimental data IV and V

could not be identified with certainty. A direct effect of irradiation on Card 2/4

Electron paramagnetic resonance ...

26336  
8/076/61/035/007/005/019  
B127/B102

the solutes was not found, but a sensitizing effect of the admixtures. By addition of glycerol or alcohol the yield of radicals could be increased by 40%. The sensitizing effect may be compensated by the tendency of the radicals to recombine to water. The yield of molecular  $H_2$  at liquid-nitrogen temperature was 0.15 molecule/100 ev in pure frozen water. Obviously, the atomic H is then sufficiently mobile either to recombine or to react with the solutes. Other radicals formed in irradiation of ice (especially OH) are stable only down to  $-160^{\circ}C$ . Dissolved carbon dioxide seems to stabilize H. The yield of radicals and nitrite ions is about the same. The radical yield does not depend on the nature of solutions being saturated with gas. Alkaline solutions exert a sensitizing effect on the radical formation. Mention is made of M. A. Proskurnin, N. Ya. Buben, V. I. Smirnova, T. A. Simonova, V. V. Voyevodskiy. There are 3 figures, 2 tables, and 10 references: 6 Soviet and 4 non-Soviet. The two most important references to English-language publications read as follows: C. K. Yen, et. al.: Phys. Rev., 112, 1169, 1958. L. H. Piette, et. al.: J. Chem. Phys., 30, 1623, 1959.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physicochemical Institute imeni L. Ya. Karpov)

Card 3/4

43226

S/844/62/000/000/017/129  
D290/D307

11.3260

AUTHORS: Sharpatyy, V. A. and Proskurnin, M. A. (deceased)

TITLE: The intermediate products of the radiolysis of water

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 122-126

TEXT: The authors discuss experimental methods of studying the intermediate products of the radiolysis of water, in such a way that the yields of radiolysis can be separately estimated, reviewing some of their own and other published work on the yields of nitrite ions from the irradiation of solutions of nitrate ions of different concentrations at different dose rates, temperatures and pH values; the nitrite yields show several steps at approximately 4, 8, and 12 equiv/100 ev. Similar results are reported in the present work, using nitrate solutions containing combined acceptors such as glycerol. The yields of radiolysis reactions involving the peroxyamine-disulfonate ion (PADS) were studied using electron spin reson-

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The intermediate products . . .

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D290/D307

ance (the PADS ion can accept both H and OH radicals): the PADS yields were about 12 equiv/100 ev in the presence of glycerol and about twice this value in the absence of glycerol. It is concluded that three types of excited water molecules are produced in approximately equal amounts (about 4 molecules/100 ev) during the radiolysis of aqueous solutions. The assistance of N. Ya. Buben and Yu. N. Molin of the Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AS USSR) is acknowledged. There are 4 figures.

ASSOCIATION: Fiziko-khimicheskii institut im. L. Ya. Karpova (Physico-Chemical Institute im. L. Ya. Karpov)

Card 2/2

S/844/62/000/000/021/129  
D244/D307

AUTHORS: Sharpatyy, V. A. and Molin, Yu. N.

TITLE: Radiolysis of  $\text{HON}(\text{SO}_3\text{K})_2$  solutions

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Itd-vo AN SSSR, 1962, 141-143

TEXT: Electron paramagnetic resonance was used to study the kinetics of product formation in the liquid phase radiolysis of  $\text{NO}(\text{SO}_3\text{K})_2$  and  $\text{HON}(\text{SO}_3\text{K})_2$ , the latter giving  $\text{NO}(\text{SO}_3\text{K})_2$  on irradiation. In the presence of a competing acceptor, glycerine, the yield of  $\text{NO}(\text{SO}_3\text{K})_2$  decreases sharply as compared with the yield obtained on the irradiation of  $\text{HON}(\text{SO}_3\text{K})_2$  without glycerine, or in the presence of a conjugated acceptor (nitrate ion). The latter acceptor acts, therefore, as a sensitizer. The formation of  $\text{NO}(\text{SO}_3\text{K})_2$  passes through a maximum in a number of cases. The formation of  $\text{H}_2$  and  $\text{O}_2$   
Card 1/2

Radiolysis of HON (SO<sub>3</sub>K)<sub>2</sub> . . .

S/844/62/000/000/021/129  
D244/D307

during the irradiation proceeds linearly in the dosage of 0 to 10<sup>5</sup> rads, the yield of the gases depending on the nature of the acceptor. It is concluded that NO(SO<sub>3</sub>K)<sub>2</sub> results from the interaction of hydroxylaminesulphonate-ion with OH radicals. There are 3 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova; Institut khimicheskoy fiziki AN SSSR (Physico-Chemical Institute im. L. Ya. Karpov; Institute of Chemical Physics, AS USSR)

Card 2/2

1:381h

B/020/62/147/004/021/027  
B101/B186

AUTHORS: Sharpatyy, V.A., Safarov, S.A., Yanova, K.G.

TITLE: Radiation-chemical stability of some heterocyclic compounds

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 4, 1962, 863-866

TEXT: The effect of the heteroatom on the stability of furan, pyrrole, thiophene, and pyridine was studied. The e.p.r. spectra were taken at  $-170$  to  $-160^{\circ}\text{C}$ , and the formation and accumulation of radicals were recorded with an accuracy of 30%. The initial radical yield increased in the series thiophene < pyrrole < furan, and the ratio was 0.1 : 0.5 : 1.1. The curve of radical accumulation approaches the value of saturation with increasing duration. The similarity in initial radical yields of furan and tetrahydrofuran is explained by a decrease in the aromatic nature of furan owing to the effect of the heteroatom on the distribution of the  $\pi$ -electron cloud density. The e.p.r. spectra are a superposition of two types of radical spectra, one obtained by separation of an H atom from the molecule, the other by attachment of an H atom to a neutral

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Radiation-chemical stability of ...

S/020/62/147/004/021/027  
B101/B186

molecule. The spectrum of the first radical is a doublet with  $\sim 30$  oe splitting. The doublet center corresponds to the g-factor of the free electron. The spectrum of the second type of the radical has a multiplet hyperfine structure caused by interaction of the unpaired electron and four protons, the former staying mainly at the C atom bound by two H atoms. The ratio of component intensities is 1 : 2 : 1. Each component itself is split owing to its interaction with other protons. The spin density of the unpaired electron at the CH atom groups increases in the series pyrrole < thiophene < furan as compared to the density at the CH<sub>2</sub> groups. +

It is assumed that the H atom in the radiolysis of heterocyclic compounds adds to the heteroatom in  $\beta$ -position. Similar results were obtained for pyridine. The initial yield (0.7) was much higher than that of benzene. G<sub>R</sub> increased with the radiation dose. Here too, the increase in reactivity is due to the irregular distribution of the  $\pi$  cloud caused by the heteroatom. The e.p.r. spectrum is a triplet with a 1 : 2 : 1 ratio of component intensities. Atomic H is attached to the  $\gamma$ -carbon atom of the pyridine ring. Splitting of every triplet line into three components is caused by interaction of the spin of the unpaired electron with two

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S/020/62/147/004/021/027  
B101/B186

Radiation-chemical stability of ...

protons or, what is more likely, with the N nucleus. The type of attachment of the H atom to the heterocyclic compounds studied has not been explained sufficiently. Conclusion: The radiolytic behavior and the e.p.r. spectrum of the compounds studied shows the stability to be affected by two opposite factors, namely, the presence of two conjugated bonds and the irregular distribution of the electron density in the ring, caused by the heteroatom. There are 4 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova  
(Physicochemical Institute imeni L.Ya. Karpov)

PRESENTED: July 7, 1962, by S.S. Medvedev, Academician

SUBMITTED: July 4, 1962

Card 3/3

L 11063-63 EWT(m)/BDS--AFFTC/ASD  
ACCESSION NR: AP3001665

S/0074/63/032/006/0737/0753

AUTHOR: Sharpaty, V. A.

51

TITLE: Radiolysis of frozen aqueous solutions

SOURCE: Uspekhi khimi, v. 32, no. 6, 1963, 737-753

TOPIC TAGS: frozen aqueous solutions

ABSTRACT: Review of Soviet and foreign literature. Among the topics considered are: kinetics of the buildup of end products in the radiolysis of ice and aqueous solutions by fluorescent and thermoluminescent methods; the intermediate radical products of radiolysis, including their identification and properties; the effect of impurities on the behavior of radicals formed during radiolysis of ice; intermediate radical products of the radiolysis of solutes. The author draws general conclusions from data available in the literature. Orig. art. has: 3 tables.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute)

SUBMITTED: 00

DATE ACQ: 09Jul63

ENCL: 00

SUB CODE: 00  
Card 1/1 lb/WNV

NO REF SOV: 013

OTHER: 058

SARPATIJ, V.A. [Sharpatyy, V.A.]; SAFARIK, Imre [translator]

Chemistry of the radiation effect of aqueous solutions.  
Kem tud kozl MTA 18 no.1:113-153 '62.

1. Karpov Fizikai-Kemial Intezet, Moscow.



L 16960-63

EFF(c)/EWT(1)/EWT(m)/BDS/EEC(b)-2

AFFTC/ASD PI-4/Pr-4  
S/076/63/037/004/029/029

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68  
68

AUTHOR: Sharpatyy, V. A., Yanova, K. G.

TITLE: Stabilization of the oxidizing components of water radiolysis<sup>19</sup> by anions

PERIODICAL: Zhurnal fizicheskoy khimii, V. 37, No. 4, 1963, 948-949

TEXT: In order to verify the hypothesis of the stabilization of the oxidizing components of radiolysis by anions the author conducted tests in which he employed the method of electron paramagnetic resonance. He was able to establish the fact that in the case of the radiolysis of aqueous neutral nitrate solutions near  $g = 2.0036$  there is an absorption line ( $g$ -factor of the line = 2.015), the appearance of which is connected with the transformation of the OH radical. The  $g$ -factor characterizes the spin-orbital interaction; however, changes in the  $g$ -factor reflect the degree of stabilization of the OH radical by the anion. There are 2 figures. The most important English-language reference reads as follows: R. Livingston, A. I. Weinberger, J. Chem. Phys., 33, 499, 1960. The authors express their gratitude to D. M. Margolin and B. V. Maslov for their help in irradiating samples with accelerated electrons.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L. Ya. Karpova (Physics-Chemistry Institute imeni L. Ya. Karpov)

SUBMITTED: July 25, 1962

Card 1/1

L 18897-63  
ACCESSION NR: AP3006596  
EPR/EPF(c)/EWP(j)/EWT(m)/BDS ASD Ps-4/Pr-4/Pc-4 RM/WW/  
S/0020/63/151/006/1347/1349 MAY/JFW

AUTHORS: Pravednikov, A. N.; Kardash, I. Ye.; Bazov, V. P.; Yeliseyeva, N. V.;  
Sharpaty\*, V. A.; Medvedev, S. S. (Academician)

TITLE: Free-radical polymerization of triazine cycles

SOURCE: AN SSSR. Doklady\*, v. 151, no. 6, 1963, 1347-1349

TOPIC TAGS: free radical, polymerization, triazine, triazine cycle, free-radical polymerization

ABSTRACT: The present article reports the results of spectroscopic and electron paramagnetic resonance analysis of the polymers obtained by heating triazines with perfluoroacetone as a source of CF<sub>3</sub> radicals at 520C. The free-radical polymerization of triazine cycles, evidently representing addition of the free radical to the cycle on the double bond with subsequent opening of the cycle, must be accompanied at high temperatures by depolymerization, by a splitting of the monomeric by a unit from the polymeric radical. Orig. art. has: 1 formula 2 figures.

ASSOCIATION: none  
SUBMITTED: 28May63  
SUB CODE: CH  
Card 1/1

DATE ACQ: 27Sep63  
NO REF SOV: 000

ENCL: 00  
OTHER: 000

L 15706-65 EWG(j) ENT(m) / EFP(c) / EFT(n) - 2 / EWP(j) / T / EWA(h) / EWA(l) Pc-l/Pr-l/Pu-l/  
 Feb AFFTC/AGE-3/312/RPL/STC(1)/EPC(es)/RAEM(s)/RSD(t)/RAEM(l)/SSD/ESD/AFW/ASD(e)-5/  
 ACCESSION NR: AP4044277 AS/mp)-2 CG/RP/S/0192/64/005/004/0627/0629  
 MW/JFW

AUTHORS: Teleshov, E.N.; Sharpaty'y, V.A.; Pravednikov, A.N.  
 Medvedev, S. S.

TITLE: Some changes in EPR spectra of irradiated polyisobutylene

SCOURCE: Zhurnal strukturnoy khimii, v. 5, no. 4, 1964, 627-629

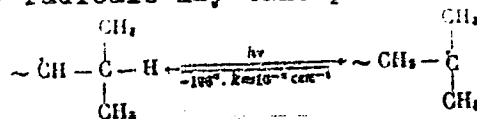
TOPIC TAGS: polyisobutylene, electron paramagnetic resonance electron, irradiation, uv. radiolysis, free radical, free radical recombination, polymer radiolysis

ABSTRACT: The irradiation of polyisobutylene (PIB) at liquid nitrogen temperature leads to accumulation of free radicals in it. The EPR spectrum of these radicals is a doublet with approximately 22 oersted splitting which is attributed to  $-C(CH_3)_2-\dot{C}H-C(CH_3)_2$  radical (I). In this work an attempt is made to obtain by the EPR method some additional information on the nature and properties of radical products which are formed during radiolysis of PIB. It was found that heating of PIB samples, irradiated with  $\sim 10^{22}$  ev/g dose of 1.6 mev electrons at  $-180^\circ C$  leads, along with the destruction of primary radicals, to irreversible changes in EPR spectrum. In it the doublet is converted to a spectrum which consists of seven basic lines with addition of  
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L 15706-65  
 ACCESSION NR: AP4044277

fine structure. This spectrum may be ascribed to  $\text{CH}_2-\dot{\text{O}}(\text{CH}_3)_2$  radical

which is produced as a result of addition of isobutylene molecule to radical (I). Isobutylene is produced during radiolysis of PIB. During low temperature radiolysis of PIB radical (II) is not detectable by the EPR method because radicals which are formed during breakage of the radical chain immediately enter recombination and disproportionation reactions. Irradiation of PIB at -60C (above vitrification temperature of the polymer) with simultaneous registration of EPR spectra enables one to find radicals (I) as well as radicals (II). PIB irradiated with UV at -60C for 5 min produces EPR spectrum similar to that of a mixture of PIB and isobutylene irradiated with electrons. It is suggested that under the influence of UV, isomerisation of primary radicals may take place:



Orig. art. has: 3 figures

Card 2/3

PROSKURNIN, M.A.; SHARIPATYY, V.A.; SMIRNOVA, V.I.; POMERANTSEV, N.M.;  
KUZ'MINTSEVA, G.N.; SIMONOVA, T.A.

Conversion of the oxidative component of radiolysis in the nitrate -  
water system. Dokl. AN SSSR 139 no.2:410-413 J1 '61. (MIRA 14:7)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Predstavleno  
akademikom A.N. Frumkinym.  
(Sodium nitrate) (Radiation)

L 15706-65

ACCESSION NR: AP4044277

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Institute of Physical Chemistry)

SUBMITTED: 28Dec63

ENCL: 00

SUB CODE: *OPNP*

NR REF SOV: 004

OTHER: 006

Card 3/3

ACCESSION NR: AP4038527

S/0020/64/156/003/0626/0629

AUTHORS: Sharpaty\*y, V.A.; Aptekar', Ye.L.; Zakatova, N.V.; Pravednikov, A.N.

TITLE: Radiolysis of polyamides

SOURCE: AN SSSR. Doklady\*, v. 156, no. 3, 1964, 626-629

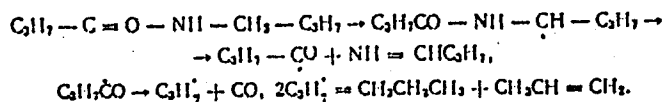
TOPIC TAGS: polyamide, radiolysis, mechanism, kinetics, radical radiolysis product, EPR method, radical mechanism, molecular cleavage, carbon hydrogen bond rupture, butyricbutyroamide, chromophoric group

ABSTRACT: This study was conducted to obtain information about the initial stages of the radiolysis of the polyamides  $-\text{CONH}(\text{CH}_2)_n$ ,  $\text{CONH}(\text{CH}_2)_m$  or  $-\text{CONH}(\text{CH}_2)_n\text{NHCO}(\text{CH}_2)_m\text{CONH}$  (where n and m can be 4 to 10) and their low molecular analogs.  $\text{CO}$  and  $\text{H}_2$  are formed on radiolysis of polyamides, with the formation of  $\text{H}_2$  being independent of radiolysis temperature and proportional to the dosage. The nature and kinetics of the accumulation of radical radiolysis products were studied by the EPR method. The yield of accumulated radicals is almost independent of the type of sample (resin or fiber) or of radiolysis temperature, and increases with the number of methyl groups in

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ACCESSION NR: AP4038527

the polymer chain. The radical  $-\text{CONHC}^{\alpha} \text{HC}^{\beta} \text{H}_2$  is presumed to be formed by rupture of the C-H bond in the methylene groups. The atomic hydrogen reacts with the polymeric material pulling away a hydrogen atom from the  $\alpha$ -methylene bonds. On illumination with visible light for 15-20 minutes the EPR spectrum changes sharply, the sample coloring intensity is increased and no gas is evolved. Further illumination has no effect. Apparently the radical formed also exists as  $\text{CH}_2 \text{CONHCH}=\text{CHCH}_2$  with the number of the chromophoric groups being retained but rearranged. Mass spectrometric analysis of the radiolysis products of butyroamide of butyric acid led to the assumption of the following radiolysis scheme:



Since in the radiolysis of the polyamides and of the low molecular analog the amount of  $\text{H}_2$  exceeds that of  $\text{CO}$ , and the amount of cross-linkage does not cover the difference between the two, it was concluded that  $\text{H}_2$  is formed during radiolysis by the radical mechanism and by molecular cleavage from two adjacent carbon atoms or from the

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ACCESSION NR: AP4038527

nitrogen and carbon atoms near the carbonyl group. Thus the processes of  $H_2$  and of CO formation during the radiolysis of polyamides are independent to some degree. "The authors thank M.K. Dobrokhotoy, A.V. Sharov, D.M. Margolin, B.V. Maslova and K.G. Yanov for help in the work." Orig. art. has: 1 table, 4 figures and 1 equation.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya Karpova (Physical Chemical Institute)

SUBMITTED: 18Dec63

ENCL: 00

SUB CODE: NP, OC

NR REF SOV: 001

OTHER: 005

Card

3/3

SHARPATYY, V.A.; YANOVA, K.G.; TUYCHIYEV, A.V.; IBRAGIMOV, A.P.

Radiolytic properties of amino acids and peptides. Dokl. AN  
SSSR 157 no.3:660-663 JI '64. (MIRA 17:7)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova. Predstav-  
leno akademikom I.I. Chernyayevym.

TFLESHOV, E.N.; SHARPATYY, V.A.; PRAVEDNIKOV, A.N.; MEDVEDEV, S.S.

Conversions in electron paramagnetic spectra of irradiated  
polyisobutylene. Zhur. strukt. khim. 5 no.4:627-629 Ag '64.  
(MIRA 18:3)

1. Fiziko-khimicheskiy institut imeni Karpova.

L 63034-65

EPF(c)/EPF(n)-2/LMP(s)/A...

Ro-4/Pr-1/Pr-1/Pr-1/Pr-1

UR/0190/65/001/005/0795/0801

ACCESSION NR: AP5013052

678.01:54-678.744

AUTHORS: Kholodova, Yu. D.; Sharpatyy, V. A.; Zakatova, N. V.

TITLE: Radiation cross-linkage of polyelectrolytes based on polyacrylamide

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 5, 1965, 795-801

TOPIC TAGS: polyamide plastic, radiation polymerization, electrolyte, resin, polymerization

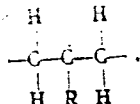
ABSTRACT: The purpose of the investigation was to determine, in part, whether **cross-linkage of polyacrylamide derivatives** renders them more stable in aqueous solutions. Several cross-linkage methods were studied: **thermal, interaction with formaldehyde** in the presence of acidic catalysts, and the radiation-chemical method. It was found that the radiation-chemical method was the most suitable, yielding water-insoluble polymers with different degree of swelling. The rate of the latter depends on the radiation dose. The polymerization of polyacrylamide (PAA), sulfonate derivative of polyacrylamide (SPAA), and polyacrylamide (AP), and hydrolyzed polyacrylonitrile (HPAN). Radiation sources used were:  $n$ - and  $\gamma$ -radiation, radioactive  $Co^{60}$ , and fast electrons.

Card 1/2

L 63034-05

ACCESSION NR: AP5013052

For all sources of radiation used, the number of cross-linkages increases with increase in the radiation dosage received by the specimen. The radiation cross-linkage mechanism was studied by EPR. Analysis of EPR spectra and the results of qualitative and quantitative analysis of radiolysis gases suggests that the most important free radical formed during radiolysis is



A mechanism for radiation cross-linkage is proposed. The authors thank D. M. Margolin, V. V. Maslov, and A. S. Yanovaya for the determination of EPR spectra and assistance in the irradiation of specimens with fast electrons. U.S.S.R. art. 1788: 3 articles, 1967, 1968, 1969.

ASSOCIATION: Institut fiziologii, AN UkrSSR (Physiological Institute, AN UkrSSR); Khimicheskii Institut im. L. Ya. Karpova (Physico-Chemical Institute)

SUBMITTED:

NO REF SOV: 007

OTHER: 005

Card 2/2 SC

YELISEYEVA, N.V.; KOTOV, B.V.; SHARPATYY, V.A.; PRAVEDNIKOV, A.N.

EPR spectra of certain irradiated nitriles. Opt. i spektr. 18  
no. 5:842-845 My '65.

(MIPA 18:10)

L 10518-66 EWT(1)/EWT(m)/EEC(k)-2/EWP(j)/EWA(m)-2/EWA(h)/EWA(l) IJP(c)

ACC NR: AP5027177 WW/GG/AT/RM SOURCE CODE: UR/0076/65/039/010/2510/2514

AUTHOR: <sup>55 44</sup> Sanayev, B.; <sup>55 44</sup> Yanova, K. G.; <sup>55 44</sup> Sharpatyy, V. A.; <sup>55 44</sup> Ibragimov, A. P.; <sup>55 44</sup> Margolin, D. M.; <sup>55 44</sup> Maslov, B. V.

ORG: <sup>55 44</sup> Moscow Physicochemical Institute im. L. Ya. Karpov (Moskovskiy fiziko-khimicheskiy institut) 91  
B

TITLE: <sup>19 5</sup> Radiochemical properties of certain peptides <sup>7</sup>

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 10, 1965, 2510-2514

TOPIC TAGS: glycine, valine, leucine, <sup>21.44.5</sup> electron radiation, radiation effect, free radical, electron paramagnetic resonance, irradiation resistance, electron spin resonance, radiation spectrum, radiation chemistry

ABSTRACT: The aim of the study was to determine the radiation resistance of certain simple peptides and the nature of the radical products formed in them during radio-lysis <sup>7</sup>. The polycrystalline peptides glycyglycine, glycyvaline, and glycyllucine were irradiated with 1.7—1.8 MEV electrons, and electron spin resonance (ESR) <sup>21.44.5</sup> spectra were recorded during the irradiation with an EPR-2IKhF spectrometer at temperatures from 128 to 295K. The radiation resistance was found to be independent of the irradiation temperature and decreases in the order glycyglycine > glycyvaline > glycyllucine. Analysis of the ESR spectra showed that irradiation of low-molecular peptides at low temperatures causes radicals to be formed from the amino acid residues present in the molecules of the peptide. Radical products can form during radio-lysis of dry polycrystalline samples both as a result of rupture of the bonds in the

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ACC NR: AP5027177

molecule which has absorbed the radiation energy and as a result of interaction of primary activated products, for example, H and NH<sub>2</sub>, with peptide molecules. The results are compared with the spectra obtained during radiolysis of aqueous solutions of glycylglycine, glycylvaline, and glycylleucine at -150C. Orig. art. has: 3 figures and 1 table.

SUB CODE: 07, 20 / SUBM DATE: 23Jun64 / ORIG REF: 004 /

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Cons: 2/2



SHARPATYY, V.A.; YANOVA, K.G.; TUYCHIEV, A.V.; IBRAGIMOV, A.P.

Radiolysis of frozen aqueous solutions of some amino acids and  
peptides. Zhur. fiz. khim. 39 no. 1:232-235 Ja '65  
(MIRA 19:1)

1. Fiziko-khimicheskiy institut imeni L. Ya. Karpova, Moskva.  
Submitted May 9, 1964.

SANAYEV, B.; YANOVA, K.G.; SHARPATYY, V.A.; IBRAGIMOV, A.P.; MARGOLIN, D.M.;  
MASLOV, B.V.

Radiochemical properties of some peptides. Zhur.fiz.khim. 39  
no.10:2510-2514 0 '65. (MIRA 18:12)

1. Moskovskiy fiziko-khimicheskiy institut imeni Karpova.  
Submitted June 23, 1964.

L 10393-67 EWT(m)/EWP(j) RM

ACC NR: AP7003123

SOURCE CODE: UR/0192/66/007/004/0511/0515

AUTHOR: Yeliseyeva, N. V.; Sharpatyy, V. A.; Pravednikov, A. N. 21

ORG: Physical Chemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut)

TITLE: Electron paramagnetic resonance spectrum of the anion-radical dimethylphenylphosphine

SOURCE: Zhurnal strukturnoy khimii, v. 7, no. 4, 1966, 511-515

TOPIC TAGS: EPR spectrum, alkylphosphine

ABSTRACT: The paper reports on a study of the donor-acceptor properties of various elements incorporated in alkyl substituents of the benzenyl ring (FhXR) by examining the capacity of these elements (X) to form  $\pi$ -bonding with the aromatic system.

Negative ions of dimethylphenylphosphine were obtained by reduction of dimethylphenylphosphine on a potassium mirror in dry and carefully degassed solutions in tetrahydrofuran and dimethoxyethane. The reduction of anions and the recording of the EPR spectrum were carried out at a temperature of  $-70^{\circ}$ . The type EPR-2 IKnF radiospectrometer was used. The curve of the paramagnetic absorption of the anion-radical was calculated, revealing all features of the ultrafine structure. Spin density values in the benzenyl ring of the radical were determined. The distribution of electron density at the ring pointed to the electron-acceptor action of the  $P(CH_3)_2$  group in the radical investigated. Orig. art. has: 2 figures, 4 formulas and 1 table. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 26Oct64 / ORIG REF: 003 / OTH REF: 010

Card 1/1 <sup>670</sup>

UDC: 538.113

SHARPENAK, A.E.

Prevention of dental caries. Vop. med. khim. 10 no.6:563-575  
N-D '64. (MIRA 19:1)

1. Moskovskiy meditsinskiy stomatologicheskiy institut.

1ST AND 2ND CODES

PROCESSES AND PROPERTIES INDEX

11A

The amino acid constituents of the proteins of fish. I. The tyrosine, cystine and tryptophan contents of the protein of sandart flesh. A. E. Sharpenak, O. N. Balashova and Perzovskaya. *Voprosy Pitaniya* 3, No. 6, 57-61 (1934); *Chem. Zentr.* 1936, I, 1334; cf. C. A. 29, 1889.

The percentage (referred to the total protein content) of each of these 3 is higher in the flesh of the sandart than in beef. Values obtained were: tyrosine 4.74% (in beef 4.42%), tryptophan 2.23% (beef 1.94) and cystine 1.40% (beef 1.20). M. G. Moore

ASB-3LA METALLURGICAL LITERATURE CLASSIFICATION

GROUPS

1ST AND 2ND CODES

GROUPS

1ST AND 2ND CODES

*Ca*

*12*

**The amino acid composition of the most important food proteins.**

I. Theoretical part. A. R. Sharpenak. *J. Physiol. (U. S. S. R.)* 17, 264-7 (1954).—A discussion of our inadequate knowledge of the value of various proteins in nutrition.

II. Method of determining the amino acid composition of proteins. O. N. Balashova, V. V. L'vova, E. M. Solov'eva and A. E. Sharpenak. *Ibid.* 208-76.—The hydrolyzed proteins were extd. with BuOH and the amino acids in the various fractions were detd. by the newer methods found in the literature. The method permits a recovery of 94% of the amino acids of casein.

III. The amino acid composition of the meat proteins (beef). *Ibid.* 277-80.—On analysis, 1 kg. of meat yielded (in g.) glycocoll and alanine, 8.64; valine and hydroxyvaline, 10.78; leucine, 23.06; glutamic and hydroxyglutamic acids, 66.75; aspartic acid, 20.34; arginine, 14.23; histidine, 11.05; lysine, 14.54; proline, 11.01; hydroxyproline, 4.90; phenylalanine, 7.31; tyrosine, 8.63; tryptophan, 3.60; cysteine and cystine, 3.32. The proteins of meat contain relatively little cystine (1.2%).

IV. The amino acid composition of the hen egg. A. R. Sharpenak, O. N. Balashova and E. M. Solov'eva. *Ibid.* 783-98.—In small eggs, the protein content is higher in the yolk than in the white; the reverse is true in large eggs. Compared to the white, the yolk contains more arginine, histidine, lysine, tyrosine and alanine, and less cystine and leucine.

V. The optimum amino acid composition of food proteins. *Ibid.* 799-804.—The amino acid content of meat and eggs is taken as a standard, to which other food proteins are compared. Milk proteins contain an excess of lysine, but are deficient in cystine, arginine, aspartic acid and histidine. The proteins of peas contain all the vitally necessary amino acids.

H. Cohen

ASB-33A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS  
PROCESSING AND PROPERTIES INDEX  
3RD AND 4TH ORDERS

ASPHALA METALLURGICAL LITERATURE CLASSIFICATION

AMINO ACID COMPOSITION OF THE ORGANS AND TISSUES OF THE HUMAN BODY. I. THE AMINO ACID COMPOSITION OF THE MUSCLE PROTEINS OF AN 8 1/2-YEAR OLD BOY. A. E. SHARPEKIN, O. N. BALASHOVA, V. F. MARCHENKOV, S. R. MENASHKIN, M. I. RAVICH-SHCERBO, M. FEL'DT and I. B. FRILYAND. J. Physiol. (U. S. S. R.) 17, 1070-7 (1934).—The muscle tissue from the amputated leg of a boy was subjected to analysis. The amino acid content was: alanine and glycine 4.92, valine 6.44, leucine 8.88, arginine 8.81, histidine 2.30, lysine 6.57, phenylalanine 5.23, tyrosine 4.11, tryptophan 2.8, cystine 2.27, proline 4.16 and NH<sub>2</sub> 1.24%. A mixt. of pea and egg proteins yields an amino acid content similar to the above. Such a diet presumably ought to be effectively utilized by a growing boy. H. Cohen

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

12

ca

The amino acid constituents and the nutrient value of horse flesh. A. E. Sharpenak, O. N. Balashova, D. A. Alterman, N. N. Petrovskaya, G. P. Eremin and E. M. Libina. *Voprosy Pitaniya* 4, No. 2, 39-43 (1935); *Chem. Zentr.* 1936, II, 3058; cf. *C. A.* 31, 6265. —A preliminary report. Horse flesh has essentially the same compn. with regard to amino acids as beef. Only the content in histidine is considerably less. The content in cystine and methionine, on the other hand, is somewhat higher. Thus horse flesh is scarcely inferior to beef in nutrient value. From the standpoint of assimilability it is suitable for human consumption. M. G. Moore

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

1ST AND 2ND ORDERS



1ST AND 2ND UPPER PROCESSES AND PROPERTIES INDEX

18

*CPA*

Methionine contents of various edible proteins. A. E. Sharpenak and G. P. Eremin. *Voprosy Pitaniya* 4, No. 4, 11-17(1935).--The methionine content of beef is 1.06% of the total albumin or 0.21% of the total meat, cystine is 1.20 and 0.23%, resp. Egg white and egg yolk contain, resp., 2.55 and 2.06% of cystine and 3.10 and 1.94% of methionine of the total albumins. The cystine and methionine contents as a fraction of total albumin for a number of other foods are, resp., fish (pike-perch) 1.46, 3.25; milk 0.98, 3.11; lentils 1.51, 0.82.  
F. H. Rathmann

ASR-51A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND LOWER PROCESSES AND PROPERTIES INDEX

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

1ST AND 2ND ORDERS      PROCESSES AND PROPERTIES INDEX      3RD AND 4TH ORDERS

CA 12

The amino acids of the proteins of pork. A. E. Shapennik, O. N. Balashova, E. M. Libina, Kh. N. PETROVSKAYA and G. P. Eremin. *Voprosy Pitaniya* 6, No. 1, 31-3(1967); *Chimie & industrie* 39, 765.—The proteins of pork contain a larger proportion of tryptophan, cystine, methionine, phenylalanine and lysine than beef; their nutritive value must therefore be higher. A. P.-C.

COMMON ELEMENTS      COMMON VARIABLES INDEX

MATERIALS INDEX      OPEN

1ST AND 2ND ORDERS      3RD AND 4TH ORDERS

1ST AND 2ND ORDERS      3RD AND 4TH ORDERS

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The amino acids of fish proteins. II. A. E. Sharpenak, O. N. Balashova and I. P. Gur'eva. <i>Voprosy Pitaniya</i> 6, No. 1, 34-0(1937); <i>Chimie &amp; industrie</i> 39, 705; cf. <i>C. A.</i> 31, 6285 <sup>g</sup> .—A study of the alanine, valine, leucine, phenylalanine, dicarboxylic acids, diamino acids, and other contents of the protein of <i>Lucioperca sandra</i> . Comparison of the results with those found for beef shows that the proteins of <i>sandra</i> have at least the same nutritive value as those of beef; they contain appreciably more cystine and methionine than beef. A. P.-C.																																																			
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<p>ca</p> <p><i>Amino acid composition of human muscle proteins. II. A. B. Sharpenok, O. N. Halaikova, S. E. Menshutina, V. I. Popovitsa, and V. F. Marchenkov. Biokhimiya 10, 80-84(1945); cf. C.A. 20, 1885'.—The amino acid content of amputated leg muscle is the same as that of the pooled muscles taken from different parts of the body 3 days after death. H. Priestley</i></p>		<p>114</p>
<p>Chair of Biol. and Organic Chem., 2nd Med. Inst., Moscow</p>		
<p>ASB-SEA METALLURGICAL LITERATURE CLASSIFICATION</p>		
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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

1ST AND 2ND ORDERS

CA

Amino acid composition of the proteins of muscle, gastric and intestinal wall, prostate, and thyroid. *A. K. Sharpenak, R. A. Il'ina, and O. N. Balashova (Second Moscow Med. Inst.). Biokhimiya 11, 133-8(1940); cf. C.A. 39, 3574.*—The proteins of the gastric and intestinal wall are richer in lysine and poorer in histidine, tyrosine, and tryptophan, when compared with muscle tissue proteins. Little tyrosine and tryptophan are found in the prostate proteins, whereas the thyroid proteins are rich in arginine and lysine. A lower lysine and phenylalanine content are found in the muscles of woman than in man.

H. Priestley

11A ✓

chain of Biochemistry

COMMON ELEMENTS

MATERIALS INDEX

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ASH-31A METALLURGICAL LITERATURE CLASSIFICATION

GROUPS

LETTERS

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LETTERS

SHARPENAK

Sharpenak and O. N. Balashova, 1. "A method of isolating proteins from vegetable products,"--2. "Diamino acid, histidine, tyrosine, typtophan and cystine content of buck-wheat proteins," --3. "Diamino acid, histidine, tyrosine, tryptophan and cysstine content of rice proteins,"--4. "Diamino acid, histidine, tyrosine, tryptophan and cystine content of 30-percent wheat flour proteins,"--5. "Diamino acid, histidine, tyrosine, tryptophan and cystine content of rye flour proteins,"--6. O. N. Balashova and A. I. Taranova, "Arginine, lysine, histidine, tyrosine, tryptophan and cystine content of potato, cabbage and carrot proteins,"-- O. N. Balashova, A. I. Taranova and L. A. Gorozhankina, 7. "Arginine, lysine, histidine, tyrosine, tryptophan and cystine content of the proteins of the neat and liver of the sheep,"--8. "Diamino acid, histidine, tyrosine, tryptophan and cystine content of codfish proteins," Nauch. trudy in-ta pitaniya (Akad. med. nauk SSSR), Moscow, 1948, p. 86-112--Eibliog: 23 items

So: U-3566, 15 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 13, 1949)

1ST AND 2ND ORDERS		3RD AND 4TH ORDERS	
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The problem of the quality of proteins in human nutrition. A. H. Sharpshak. *Sovetskaya ps Helbu, Akad. Nauk S.S.S.R. (S. pa Konferents. Vychislitelnyy. Sodinemyem) 1948, 211 70; cf. C.A. 64, 82816. It is assumed that the closer the similarity in amino acid compn. of a protein to the compn. of human protein, the better it will be retained and utilized. On this basis, egg yolk protein is shown to be an excellent nutrient, pea protein poor, and milk protein moderately good. Equations are given for detg. the deficiencies of various proteins in the diet, and for prepg. mixts. of different proteins which will be good nutrients. H. M. Leicester*

PROCESSES AND PROPERTIES INDEX

11 E

CA

A method for the determination of nutritive value of proteins in man. A. R. Shapovalov (Acad. Med. Sci., Moscow). *Fisiol. Zhur. (J. Physiol.)* 24, 103-12(1948).

-A method for the detn. of nutritive values of proteins was developed, which gives reliable data on the actual assimilation, retention coeff., and utilization coeff. Healthy individuals under rigid control of activities were used. In the 1st phase the endogenous N losses through urine and feces are detd. with the subjects receiving protein only in the form of egg yolk (50 kcal. per kg.); needed mineral salts and small amts. of natural fruit juices and vegetables are added to the diet. The total N is held slightly below the total endogenous N losses; every 3-4 days 4 g. of charcoal is fed to delineate the feces; N detns. are made on feces and urine. The 1st phase continues until N elimination is min. (11-17 days). In the 2nd phase the egg yolk is replaced by the substance whose value is to be detd. and the phase is continued until daily N elimination levels off. Coeff. of assimilation is  $K_p = [(a - b + c)/a] 100$ ; coeff. of retention is  $K_r = (a - [b + c - d + e]/(a - b + c)) 100$ ; the coeff. of utilization  $K_u = K_p K_r / 100$ , where  $a$  is N of the food,  $b$  is fecal N after feeding with test protein,  $c$  is fecal N on yolk diet,  $d$  is urinary N with test protein,  $e$  is urinary N with yolk diet. - G. M. Kosolomoff

*albumin. Lab., Inst. of Nutrition.*

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

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LETTERS



SHARPEMAK, A. Ye.

"Theoretical Solutions for Problems Concerning the Formation of Dental Caries,"  
Stomatologiya, No. 1, 1949. Prof., Moscow Stomatological Inst., -c1949-.

GOROZHANKINA, L.A.; SHARPENAK, A.E., professor, zaveduyushchiy.

Critical evaluation of methods of detecting methionine in food proteins. Vop.  
pit. 12 no.4:71-76 JI-Ag '53. (MLRA 6:10)

1. Belkovaya laboratoriya otдела fiziologii Instituta pitaniya Akademii medi-  
tsinskikh nauk SSSR. (Food--Analysis) (Proteins)

~~SHARPENAK, A. E.~~  
USSR/Medicine - Nutrition

Card 1/1            Pub. 141 - 2/19

Author            : Sharpenak, A. E.; Yerebin, G. P.

Title             : The effect of the eating schedule on protein utilization by the organism

Periodical       : Vop. pit., 7-11, Jul/Aug 1955

Abstract         : Investigated the effects of varying the number of meals per day and the relative distribution of food among these meals on dogs and humans. Found that abrupt changes in eating schedules temporarily disrupts the nitrogen balance in the system, which returns to normal 4-9 days later. Optimum eating schedule was found to be four meals per day. Distribution of relative quantities of food consumed in these four meals, i.e. 40% in morning and noon and 60% in the evening or vice versa, had little effect on the nitrogen balance. Five graphs; no references.

Institution      : Protein Laboratory (Head - Prof. A. E. Sharpenak) Inst of Nutrition, Acad Med Sci USSR, Moscow

Submitted       :

*Sharpenak, A. E.*

FD-1764

USSR/Medicine - Therapeutic Diets

Card 1/1      Pub 141-11/15

Author      : Sharpenak, A. E. Danilova, A. I.

Title        : Some critical notes concerning therapeutic diets

Periodical : Vop. pit., 49-55, Jan/Feb 1955

Abstract    : Critically examines some 14 diets in the treatment of ulcers and finds most of them seriously lacking in physiological requirements. Thus, one diet although high in potassium and manganese, is very low in proteins, fats, and carbohydrates. Maintaining a patient on such a diet for a prolonged period will disrupt otherwise normal metabolism. Recommends that therapeutic diets be reexamined and classified scientifically. Four graphs; no references; one table.

Institution: Biochemistry Laboratory, Inst of Nutrition, Acad Med Sci USSR and Chair of Biochemistry, Moscow Medical Stomatological Inst

Submitted   : --

SHARPENAK, A. E.

Material for the quantitative calculation of the amino acid  
content of proteins in food for healthy and sick persons.  
Vop.pit.14 no.5:48-53 S-O '55 (MLBA 8:11)

1. O materialakh dlia kolichestvennogo ucheta aminokislotnogo  
sostava belkov pishchi zdorovogo i bol'nogo cheloveka.

(AMINO ACIDS,

in diets in normal & pathol. cond. calculation technic)

(DIETS,

amino acid content in diets in normal & pathol. cond.  
calculation technic)



SHARPENAK, A. E.

SHARPENAK, A.E.; ARUF'YEVA, A.S.; KARPYSHEVA, V.S.

Blood proteins as a supplementary source of histidine and tryptophan in therapeutic diets. Vest.khir. 77 no.11:22-26 N '56. (MLRA 10:1)

1. Iz eksperimental'noy laboratorii bol'nitsy imeni Botkina i belkovoy laboratorii (sav. - prof. A.E.Sharpenak) Instituta pitaniya AMN SSSR, Moskva.

(DIETS, in various dis.

dry blood as source of histidine & tryptophan)

(BLOOD PROTEINS, ther. use

dry blood as source of histidine & tryptophan in diets in various dis.)

(HISTIDINE, ther. use

in various dis. in form of dry blood as supplement to diet)

(TRYPTOPHAN, ther. use

same)



USSR / Human and Animal Morphology (Normal and Patho- S-3  
logical). Digestive System.

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79021.

Author : Sharpenak, A. E., Nikolayeva, N. V., Magid, Ye. A.  
Inst : Not given.  
Title : Peculiarities of the Chemical Composition of  
Enamel in the Area of White Carious Spots Accord-  
ing to Data of Histochemical Investigation.

Orig Pub: Stomatologiya, 1957, No 2, 8-10.

Abstract: The content of calcium and albumen in white  
cariou spots and in the enamel surrounding  
them was studied. The staining of sections  
with hematoxylin and anthrapurpurin was used  
for the appearance of calcium. It was estab-  
lished that enamel afflicted with white cari-  
ous spots is intensely stained in ultra-violet

Card 1/2

SHARPENAK, A.E., prof.

Role of proteins in nutrition. Zdorov'e. 3, no.12:3-6 D '57.  
(MIRA 11:1)

(PROTEIN METABOLISM)

SHARPNAK, A.E.; KARPYNKOVA, V.S.; DATASHOVA, G.M.

Assimilation of calcium and phosphorus from powdered bone. Vop.pit.  
16 no.3:56-61 My-Je '57. (MLRA 10:10)

1. Iz kafedry biokhimi (zav. - prof. A.E. Shaponak) Moskovskogo  
meditsinskogo stomatologicheskogo instituta.

(CALCIUM, metabolism,  
assimilation from food enriched with powdered bone (Rus))

(PHOSPHORUS, metabolism,  
same)

(FOOD,  
enriched with powdered bone assimilation of calcium &  
phosphorus from (Rus))

(BONE AND BONES,  
powdered in enriched food, assimilation of calcium &  
phosphorus from (Rus))

~~SHARPENAK, A.N.~~

Amino acid requirement of man. Vop.pit. 16 no.6:9-17 H-D 157.  
(MIRA 11:3)

1. Iz Instituta pitaniya AMN SSSR, Moskva.  
(AMINO ACIDS, metabolism,  
requirement in humans (Rus))