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BIBLIOGRAPHY ON THE RADIATION
CHEMISTRY OF AQUEOUS SOLUTIONS
I. AMINO ACIDS

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This bibliography covers the literature on radiation chemistry of amino acids in aqueous solution to the present. The references were obtained by a search of the files of the Radiation Chemistry Data Center. Notification of the omission of pertinent references would be gratefully received.

The references are listed by year and alphabetically by first author within each year. At the end of each reference the Radiation Chemistry Data Center serial number is given. Abstract references are included for most foreign language articles and technical reports.

- 1969 M.K. Hamdy, M. Noaman and W.O. Caster. *Radiation Res.* 38: 214-22 (1969). Effects of cysteine and 4-amino-1-naphthol on solutions of lysosomal enzymes exposed to high doses of radiation. 69-50
- J. Holian and W.M. Garrison. *Nature* 221(5175): 57 (1969). Reconstitution mechanisms in the radiolysis of aqueous biochemical systems: Inhibitive effects of thiols. 69-33
- J.W. Purdie. *Can. J. Chem.* 47(6): 1029-36 (1969). γ -Radiolysis of disulfides in aqueous solution. II. D-Penicillamine disulfide. 69-36
- J.W. Purdie. *Can. J. Chem.* 47(6): 1037-43 (1969). γ -Radiolysis of disulfides in aqueous solution. III. L-Cysteine-D-penicillamine mixed disulfide. 69-37
- 1968 A. Al-Thannon, R.M. Peterson and C.N. Trumbore. *J. Phys. Chem.* 72(7): 2395-9 (1968). Studies in the aqueous radiation chemistry of cysteine. I. Deaerated acidic solutions. 68-195
- A.A.-M. Al-Thannon. Thesis, Univ. of Delaware, 1968, 147p. (Dissertation Abstr. 29: 1619). Kinetics of the gamma radiolytic decomposition of aqueous cysteine solutions. 68-540
- P.B. Ayscough and A.K. Roy. *Trans. Faraday Soc.* 64: 582-95 (1968). (Nucl. Sci. Abstr. 22: 23069). Electron spin resonance studies of fundamental processes in radiation- and photo-chemistry. Part 5. Dissociative electron capture in amino acids at low temperatures. 68-5015
- G.A. Brodskaya and V.A. Sharpatyi. *Khim. Vys. Energ.* 2(3): 254-7 (1968). (Nucl. Sci. Abstr. 22: 42773). Radiolysis of aqueous solutions of tyrosine. Concentration and oxygen effects. 68-448
- J. Chrysochoos. *Radiation Res.* 33: 465-79 (1968). Pulse radiolysis of phenylalanine and tyrosine. 68-62
- R.N. Diebel. BNWL-SA-1841, June 4, 1968, 7p. (Nucl. Sci. Abstr. 22: 35828). Nitrobenzene radical ions as indicators for reducing species formed during radiolysis of amino acid solutions. 68-255
- W.M. Garrison. *Current Topics Radiation Res.* 4: 43-94 (1968). Radiation chemistry of organo-nitrogen compounds. 68-236
- N. Getoff. Biological effects of transmutation and decay of incorporated radioisotopes, Internat. Atomic Energy Agency, Vienna, 1968, p.215-31. Radiation chemistry of amino acids. 68-491

- 1968 J. Holian and W.M. Garrison. J. Phys. Chem. 72(13): 4721-23 (cont)(1968). On the radiation-induced reduction of amide and peptide functions in aquoorganic systems. 68-488
- E. Hussmann. Biophysik 5: 132-44 (1968). (Nucl. Sci. Abstr. 23: 273). After effect in X-irradiated aqueous solutions of lysin and other aliphatic amino acids. 68-605
- E. Hussmann. Strahlentherapie 135 (4): 489-92 (1968) (Ger). After effects of X-ray-irradiated amino acids. 68-217
- K.S. Korgaonkar and S.V. Joshi. Radiation Res. 35: 213-26 (1968). Gamma irradiation studies with synthetic polyamino acids. 68-3004
- K.S. Korgaonkar, S.V. Marathe and K.A. Chaubal. Sci. Cult. (Calcutta) 34(3): 100-3 (1968). Effect of γ -radiation on the aqueous solutions of L-proline and hydroxy-L-proline. 68-6064
- N. Matsuura and N. Shinohara. Bull. Chem. Soc. Japan 41 (4): 888-92 (1968). The hydrogen yields in the radiolysis of cysteine and biscysteinatocobaltate (III) in 0.8 N sulfuric acid. 68-208
- J.E. Packer and R.V. Winchester. Chem. Commun. (13-14): 826-27 (1968). Radiolysis of neutral aqueous solutions of cysteine in the presence of oxygen. 68-214
- R.M. Peterson. Thesis, Univ. of Delaware, 1968, 122p. (Dissertation Abstr. 29: 2388; Nucl. Sci. Abstr. 25: 24241; Chem. Abstr. 70: 101588y). The gamma radiolytic decomposition of cysteine and related compounds in dilute, aqueous solution. 68-691
- R. Santus, C. Helene and M. Ptak. Photochem. Photobiol. 7: 341-60 (1968). (Fr). Etude par resonance paramagnetique electronique et par spectrophotometrie d'absorption des processus primaires dans la photochimie de solutions aqueuses congelees a 77°K d'acides amines aromatiques et de polypeptides. 68-5020
- R. Shapira and G. Stein. NYO-3242-29, Aug. 1, 1967 - Aug. 31, 1968, p.13-28. Functional correlation between aromatic and divalent sulfur amino acids in ribonuclease shown in its reaction with hydrogen atoms in aqueous solution. 68-550
- V.A. Sharpatyi, N.V. Zakatova and G.A. Brodskaya. Khim. Vys. Energ. 2(5): 473-4 (1968) (Russ). Aromatic and sulfur-containing amino acids as acceptors of oxidative components in radiolysis of water. 68-471

- 1968 Yu.V. Silaev, V.M. Shiryaev and I.I. Sapezhinskii. Khim. Vys. (cont) Energ. 2(4): 338-43 (1968) (Russ). Postluminescence of X-ray irradiated aqueous solutions of amino acids, peptides and proteins. 68-6044
- H.B. Steen. Photochem. Photobiol. 8: 47-51 (1968). Luminescence of L-tryptophan in the dry state and in aqueous solution induced by X-rays and U.V.-light at 77°K. 68-6021
- L.P. Theard and F.C. Peterson. GA-8872, Sept. 6, 1968, 111p. (Nucl. Sci. Abstr. 23: 9420). Pulse radiolysis study of protection of pyrimidine base components of nucleic acid by aminothiols in aqueous solution. 68-597
- C.N. Trumbore. NYO-3383-13, May 7, 1968, 13p. (Nucl. Sci. Abstr. 22: 40106). Studies on primary processes in the radiation chemistry of liquids and on the mechanism of the interaction of radiation with biologically important chemical systems. 68-292
- W.A. Volkert and R.R. Kuntz. J. Phys. Chem. 72(10): 3394-3400 (1968). The reactions of hydrogen atoms in aqueous solutions. Some amino acids. 68-343
- W.A. Volkert. Thesis, Univ. of Missouri, 1968, 164p. (Dissertation Abstr. 29: 973). Some radical reactions with amino acids in aqueous solutions. 68-539
- J. Weiss and C.H. Collins. Radiation Res. 33: 274-81 (1968). (Nucl. Sci. Abstr. 22: 18838; Chem. Abstr. 68: 64547v). Radiolysis of aromatic compounds. Deuterated toluene. 68-50
- O.H. Wheeler. Photochem. Photobiol. 7: 675-81 (1968). Radiolysis of peptides and proteins. 68-417
- V.G. Wilkening, M. Lal, M. Arends, and D.A. Armstrong. J. Phys. Chem. 72 (1): 185-90 (1968). The cobalt-60 γ radiolysis of cysteine in deaerated aqueous solutions at pH values between 5 and 6. 68-2
- 1967 D.A. Armstrong, V.G. Wilkening and M. Lal. 153rd Meeting of the Am. Chem. Soc., Miami Beach, Fla., Apr. 10-14, 1967, Abstr. No. 48. The γ -radiolysis of cysteine in deaerated 1 N HClO₄ solutions. 67-519
- W.A. Armstrong, W.G. Humphreys. Can. J. Chem. 45: 2589-99 (1967). (Nucl. Sci. Abstr. 22: 2147). Amino acid radicals produced chemically in aqueous solutions. Electron spin resonance spectra and relation to radiolysis products. 67-5102
- H.L. Atkins, W. Bennett-Corniea and W.M. Garrison. J. Phys. Chem. 71: 772-4 (1967). The radiation-induced oxidation of peptides in aqueous solutions. 67-10

- 1967 J.H. Baxendale and P.L.T. Bevan. The Chemistry of Ionization (cont) and Excitation (Proc. of Conference on Radiation Chemistry and Photochemistry, Univ. of Newcastle-upon Tyne, 1966), Johnson, G.R.A. and Scholes, G. (ed.), Taylor and Francis Ltd., London, 1967, p.253-7. Absolute rates of hydrogen atom reactions in aqueous solution. 67-550
- R. Brdicka and A. Fojtik. Collection Czech. Chem. Comm. 32: 3024-8 (1967). The correlation of the overall rate constant to the dose intensity in the kinetic equation for radio-oxidation of cystine in aqueous solutions. 67-509
- G.A. Brodskaya and V.A. Sharpatyi. Zh. Fiz. Khim. 41(11): 2850-4 (1967) (Russ). (Nucl. Sci. Abstr. 22: 16579). Radiolysis of aqueous tyrosine solutions. II. Dependence on the medium pH. 67-658
- K. Dose and C. Ponnampereuma. Fifteenth Annual Meeting of the Radiation Research Society, San Juan, Puerto Rico, May 7-11, 1967, Abstr. No. Fe-2. The effect of ionizing radiation on N-acetylglycine in the presence of ammonia. 67-429
- J.L. Festa. Thesis, Univ. of New Hampshire, 1967. (Dissertation Abstr. Pt. B 27: 4340). A study of the radiation chemistry of aqueous cysteine solutions. 67-468
- G.A. Grodskaya and A.P. Ibragimov. Dokl. Akad. Nauk Uzb. SSR (7): 34-5 (1967) (Russ). (Nucl. Sci. Abstr. 22: 2125). Protective effects of aromatic amino acids. 67-723
- J. Kopoldova, J. Liebster and E. Gross. Radiation Res. 30: 261-74 (1967). Radiation chemical reactions in aqueous solutions of methionine and its peptides. 67-16
- L.H. Izurieta and R.A. Munoz. Politec. (Quito, Ecuador) (1): 79-118 (1967) (Span.). (Chem. Abstr. 69: 112111t). Deamination of L-proline by ionizing radiation and oxidizing agents. 67-727
- W. Lohmann, T.C. Evans, M. Momeni. Radiation Res. 31: 544 (1967). Paramagnetic resonance and optical absorption spectra of different amino acids in aqueous solutions of copper. 67-5129
- A. Ohara and K. Toda. J. Radiation Res. (Japan) 8(2): 45-52 (1967). (Nucl. Sci. Abstr. Japan 7: 05934). The radiolysis in aqueous solution of aromatic amino acids. 67-691
- J.W. Purdie. Radiation Res. 31: 584 (1967). γ -Radiolysis of cysteine-penicillamine unsymmetrical disulfide in aqueous solution. 67-426

- 1967 C.N. Trumbore. NYO-3383-06, Feb. 14, 1967, 13p. (Nucl. Sci. Abstr. 21: 25873). Studies in chemical radiation protection agents. 67-477
- S.Y. Wang. NYO-2798-32, Sept. 1967, 18p. Progress report on effects of ultraviolet radiation on nucleic acids and related compounds, December 1, 1964-November 31, 1967. 67-7480
- V.G. Wilkening, M. Lal, M. Arends and D.A. Armstrong. Can. J. Chem. 45(11): 1209-14 (1967). (Chem. Abstr. 67: 16700x). The γ -radiolysis of cysteine in deaerated 1 N HClO₄ solutions. 67-148
- 1966 R. Braams. Radiation Res. 27: 319-29 (1966). Rate constants of hydrated electron reactions with amino acids. 66-11
- J. Liebster and J. Kopoldova. Radiation Res. 27(2): 162-73 (1966). Radiation chemical reactions in aqueous oxygenated and oxygen-free solutions of aliphatic dipeptides and tripeptides. 12915
- K.F. Nakken and A. Pihl. Radiation Res. 27: 19-31 (1966). The X-ray-induced damage to the p-aminobenzoic acid moiety of folic acid and some other p-aminobenzoic acid conjugates irradiated in solution. 13452
- A. Ohara. J. Radiation Res. (Japan) 7(1): 18-28 (1966). On the radiolysis of methionine in aqueous solution by γ -radiation. 66-598
- R. Pageau and A.R. Mehran. Nature 212(5057): 98-9 (1966). Radio-chemical degradation of threonine and serine. 66-358
- J.W. Purdie. AED-CONF-66-183-2, 10p. (Nucl. Sci. Abstr. 21: 3134). γ Radiolysis of disulfides in dilute aqueous solutions. 66-585
- S. Rokushika, S. Ganno and others. J. Radiation Res. (Japan) 7(2): 47-57 (1966). Radiolysis of cystine in aqueous solution by gamma irradiation. 66-548
- H. Schildknecht and O. Volkert. Z. Anal. Chem. 216: 97-117 (1966)(Ger). Structural information and identification of organic substances by means of "electron pyrolysis". Part I. Electron pyrolysis of carboxylic acids, alcohols, olefins and amino acids. 66-545
- V.A. Sharpatyi, K.G. Yanova and A.P. Ibragimov. Tr. Mosk. Obshch. Ispyt. Priir., Otd. Biol. 16: 110-12 (1966) (Russ). (Nucl. Sci. Abstr. 22: 28364). Study of amino acids and peptides radiation chemical properties by means of EPR method. 66-5148

1966 A.J. Swallow. PB-181506, 1966, p.49-58. (Nucl. Sci. Abstr. (cont)20: 25124). Some aspects of the radiation chemistry of organic compounds. 13229

C.N. Trumbore. NYO-3383-3, Apr. 18, 1966, 11p. (Nucl. Sci. Abstr. 20: 25124). Studies in chemical radiation protection agents. [Aqueous radiation chemistry of cysteine]. 13550

1965 J. Barzelatto, J. Pinter, H. Behrens, S. Ojeda and T. Palma. Fifth Inter-American Symposium on the Peaceful Application of Nuclear Energy. Washington, D.C.; Pan American Union, 1965, p.25-30. (Nucl. Sci. Abstr. 19: 36518). Dose-rate effect on the radiolysis of mono-and diiodotyrosine. 11838

R. Braams, Pulse Radiolysis, Academic Press, London-New York, 1965, p.171-80. (Nucl. Sci. Abstr. 20: 10919). Reactions of the hydrated electron with amino acids, peptides and proteins. 13327.

J.V. Davies, M. Ebert and A.J. Swallow. Pulse Radiolysis, Academic Press, London-New York, 1965, p.164-70. (Nucl. Sci. Abstr. 20: 10918). Reactions of the hydrated electron with glycine and other amino acids and peptides. 13326

M. Ebert and A.J. Swallow. Advan. Chem. Ser. 50: 289-96 (1965). (Chem Abstr. 63: 14243f). Reactions of the hydrated electron with substances of biological importance. [Radiolysis of aq. solns. of alanine]. 12594

M.L. Granovskaya, V.S. Grinev, N.A. Duzhenkova, N.P. Krushinskaya, and A.V. Savich. Radiobiologiya 5: 633-7 (1965) (Russ). Determination of the yield of radiation-chemical recombination of tryptophan and guanine by means of mathematical analysis of absorption spectra of solutions. 12170

A.P. Ibragimov and A.V. Tuichev. At. Energ. (USSR) 18: 185-7 (1965) (Russ). Use of glycine aqueous solutions in gamma and fast neutron dosimetry. 10316

T. Ikeda. Rep. Fac. Sci., Shizuoka Univ. 1: 13-18 (1965). (Nucl. Sci. Abstr. 20: 31299). Deamination of aqueous glycine-Cu(II) solution by gamma-rays. (Part II). 13620

C.A. Leone and M. Kang. Radioisotopes (Tokyo) 14: 303-8 (1965). The effect of gamma-irradiation on peptides. I. The effect of gamma-irradiation on aqueous solutions of triglycine. 11889

1965 A.-R. Mehran and R. Pageau. Can. J. Biochem. 43: 1359-66
(cont)(1965). Radioformation of aspartic acid in aqueous solutions
of alanine. 11756

S.O. Parraguez. Anales Fac. Quim. Farm., Univ. Chile 16:
29-35 (1964-5) (Span). (Chem. Abstr. 64: 18762b). Radiolysis
of moniodotyrosine and diiodotyrosine in aqueous solution.
12627

V.A. Sharpatyi, K.G. Yanova, A.V. Topchiev and A.P. Ibragimov.
Zh. Fiz. Khim. 39: 232-5 (1965) (Russ). (Nucl. Sci. Abstr. 19:
20012). Radiolysis of frozen aqueous solutions of
some amino acids and peptides. 10352.

H.A. Sokol, W. Bennett-Corinea and W.M. Garrison. J. Am.
Chem. Soc. 87: 1391-2 (1965). A marked effect of conformation
in the radiolysis of poly- α -L-glutamic acid in aqueous
solution. 10341

E. M. Southern and D.N. Rhodes. Biochem. J. 97: 14c-16c
(1965). Radiation-induced optical inversion of L-glutamate
residues in poly- α , L-glutamic acid. 11691

B.M. Weeks, S.A. Cole and W.M. Garrison. J. Phys. Chem.
69: 4131-7 (1965). Reactions of alanine with the reducing
species formed in water radiolysis. 12160

R.L.S. Willix and W.M. Garrison. J. Phys. Chem. 69: 1579-83
(1965). The effect of cupric ion on the radiation chemistry
of aqueous glycine. 12261

1964 D.A. Armstrong and V.G. Wilkening. Can. J. Chem. 42:2631-5
(1964). Effects of pH in the γ -radiolysis of aqueous
solutions of cysteine and methyl mercaptan. 9989

T.A. Brodskaya and A.P. Ibragimov. Radiatsionnye Effekty
v Biologicheskikh Sredakh i Organizmakh i Metody ikh
Issledovaniya, Publishing House of the Sciences, Tashkent,
1964, p.97-106. (Nucl. Sci. Abstr. 18: 39357).
Radiolysis of the aqueous solutions of tyrosine and phenylalanine
as a function of their concentration and radiation dose. 9083

C.L. Greenstock and E. Rollinson. Nature 201: 812-13 (1964).
Pulse radiolysis using a constricted air spark light source.
(Solutions of amino acids in water). 8767

E.J. Hart, S. Gordon and J.K. Thomas. J. Phys. Chem. 68:
1271-4 (1964). Rate constants of hydrated electron reactions
with organic compounds. [Compounds include amino acids]. 9917

1964 A.P. Ibragimov and Kh. Mirzarakhmatov. Radiatsionnye
(cont)Effekty v Biologicheskikh Sredakh i Organizmakh i Metody ikh
Issledovaniya, Publishing House of the Sciences, Tashkent,
1964, p.81-7. (Nucl. Sci. Abstr. 18: 39355). The
influence of gamma-radiation dose on the radiolysis of aqueous
solutions of tryptophan, proline, asparaginic and glutamic
acids. 9081

J. Kopoldova, I. Liebster and A. Babicky. Radiation Chemistry,
(Proc. of Tihany Symp. Radiation Chemistry, 1962), Publishing
House of the Hungarian Acad. Sci., Budapest, 1964, p.365-8.
(Nucl. Sci. Abstr. 19: 506). Mechanism of the radiolysis
of some aliphatic amino acids. 9268

G. Lassmann. Z. Physik. Chem. (Leipzig) 225: 409-17 (1964).
(Nucl. Sci. Abstr. 18: 33675). On the radiation-induced
radical formation in the water-amino acid system. 8932

C.A. Leone and M.S. Kang. Korean J. Zool. 7: 1-5 (1964).
(Nucl. Sci. Abstr. 19: 9201). The effect of gamma-
irradiation on aqueous solutions of triglycine. 2. Electro-
phoretic and paper chromatographic study of irradiated triglycine.
10051

J. Liebster and J. Kopoldova. Advan. Radiation Biol. 1:
157-226 (1964). The radiation chemistry of amino acids. 10327

J. Liebster and J. Kopoldova. Nature 203: 636-7 (1964).
Radiation chemical reactions in deoxygenated peptide solutions.
9073

N. Matsuura, K. Muroshima and M. Takizawa. Nippon Kagaku
Zasshi 85: 268-75 (1964) (Jap). (Nucl. Sci. Abstr. 18: 29780).
Radiolysis of cysteine and biscysteinocobaltate
(III) in aqueous solution by ^{60}Co γ -rays. 9447

N. Matsuura, K. Muroshima. Sci. Papers Coll. Gen. Educ.,
Univ. Tokyo 14: 183-95 (1964). (Nucl. Sci. Abstr. 19:
15633). Radiolysis of cysteine and complex molecules
with SH linkage. I. Radiation chemistry of cysteine in the
presence and absence of iron in aqueous solution. 10246

C.R. Maxwell. Radiation Res. Suppl. 4: 175-8 (1964).
Addendum: Radiolysis of aqueous glycine. 9907

L. Rey. Fr. Patent 1,405,884, July 16, 1965, 15p.
(Chem. Abstr. 63: 16464c). Preparation and stabilization
of free radicals. 12649

1964 A. El Samahy, H.L. White and C.N. Trumbore. J. Am. Chem. Soc. (cont)86: 3177-8 (1964). Scavenging action in γ -irradiated aqueous cysteine solutions. 8953

B.M. Tolbert, M.H. Krinks and Cl. O. Stevens. Proceedings of the Conference on Methods of Preparing and Storing Marked Molecules, Brussels, Nov. 13-16, 1963 (Publ. 1964). (Nucl. Sci. Abstr. 18: 43688). Radiation chemistry of amino acids and proteins. 9185.

1963 M. Anbar and P. Rona. Proc. Chem. Soc.: 244-6 (1963). The effect of cupric and thallous ions on the radiolysis of aqueous solutions of ethylenediamine, propane-1, 2-diamine, and glycine. 8198

W.A. Armstrong and D.W. Grant. Can. J. Chem. 41: 1882-7 (1963). The Co^{60} γ -radiolysis of aqueous cystine solutions. I. The effect of chloride ion on the ammonia yield. 8086

R. Brdicka, Z. Spurny and A. Fojtik. Collection Czech. Chem. Commun. (28): 1491-8 (1963). Effect of the dose intensity on the rate of radio-oxidation of cystine in aqueous solutions. 8120

F. Friedberg and G.A. Hayden. Science 140: 825-6 (1963). Gamma irradiation of polypeptides: transformation of amino acids. 7845.

H. Hatano, S. Ganno and A. Ohara. Bull. Inst. Chem. Res., Kyoto Univ. 41: 61-70 (1963). Nucl. Sci. Abstr. 17: 27429). Radiation sensitivity of amino acids in solution and in protein to gamma rays. 7878

H. Hatano and S. Rokushika. Bull. Inst. Chem. Res., Kyoto Univ. 41: 76-82 (1963). (Nucl. Sci. Abstr. 17: 27431). Oxidative deamination of several amino acids in aqueous solution by gamma irradiation. 7879

E. Hussmann. Biophysik 1: 87-95 (1963) (Ger). Secondary reactions in X-irradiated lysine. 8430

J. Kopoldova, J. Liebster and A. Babicky. Intern. J. Appl. Radiation Isotopes 14: 455-60 (1963). The mechanism of the radiation chemical degradation of amino acids. III. Radiolysis of norvaline in aqueous oxygenated and oxygen-free solutions. 8433

J. Kopoldova, J. Liebster and A. Babicky. Intern. J. Appl. Radiation Isotopes 14: 489-92 (1963). The mechanism of the radiation chemical degradation of amino acids. IV. Radiolysis of valine in aqueous oxygenated and oxygen-free solutions. 8397.

- 1963 J. Kopoldova and J. Liebster. Intern. J. Appl. Radiation (cont) Isotopes 14: 493-8 (1963). The mechanism of the radiation chemical degradation of amino acids. V. Radiolysis of norleucine, leucine and isoleucine in aqueous solution. 8398
- C.A. Leone and M.S. Kang. Korean J. Zool. 6(2): 16-20 (1963). (Nucl. Sci. Abstr. 18: 39334). The effect of gamma-irradiation on aqueous solutions of triglycine. I. Spectrophotometric study of irradiated triglycine. 9070
- J. Liebster, J. Kopoldova and A. Babicky. Radiation Res. 19: 551-8 (1963). Radiation-induced carboxylation reactions of aliphatic amino acids and monocarboxylic acids. 8154.
- P.H. Marriott. J. Pharm. Pharmacol. 15: 666-70 (1963). An investigation into the effects of gamma-rays on aqueous solutions of p-amino-benzoic acid. 8715
- J.E. Packer. J. Chem. Soc. 2320-5 (1963). The action of ^{60}Co -gamma-rays on aqueous solutions of hydrogen sulphide and of cysteine hydrochloride. 7814
- G. Peter and B. Rajewsky. Z. Naturforsch., 18b: 110-14 (1963) (Ger). The indirect effects of X radiation on amino acids. II. Irradiation of tryptophan. 7770
- A. Pihl, T. Sanner and T. Henriksen. Acta. Chem. Scand. 17: 2124-5 (1963). Effect of irradiation temperature on the yield of solute radicals in frozen aqueous solutions. [solutions of DL- α -alanine were irradiated]. 8539
- A.J. Swallow. Radiation Res. Proc. Intern. Conf., Natick, Mass., Jan. 14-16, 1963, p.49-58. (Chem. Abstr. 61: 1418h). Some Aspects of the radiation chemistry of organic compounds. [effect of radiation on aq. solns. of glycine, cysteine]. 11161
- C.N. Trumbore. TID-18812, June 7, 1963, 9p. (Nucl. Sci. Abstr. 17: 25287). Primary chemical process in radiolysis of liquids. [Radiation chemistry of cysteine in aqueous solutions]. 7834
- 1962 N.A. Duzhenkova, Yu. D. Parfenov, A.V. Savich and E.I. Yartsev. Radiobiologiya 2: 662-6 (1962) (Russ). Radiation-induced chemical changes in aqueous solutions of tryptophan. 7485
- T. Henriksen. Nature 193: 371-2 (1962). Radiation-induced radicals in water, deuterium oxide and aqueous solutions of glycine at low temperatures. 6019
- T. Henriksen. Radiation Res. 17(2): 158-72 (1962). Radiation-induced free radicals in frozen aqueous solutions of glycine. 11478

- 962 T. Ikeda. Rept. Liberal Arts Sci. Fac. Shizuoka Univ. 3:
cont) 131-3 (1962). (Nucl. Sci. Abstr. 19: 18024).
Deamination of aqueous glycine-Cu(II) solution by gamma
rays. 10308
- J. Kopoldova, J. Liebster and A. Babicky. Intern. J. Appl.
Radiation Isotopes 13: 617-22 (1962). The mechanism
of the radiation chemical degradation of amino acids. II.
Degradation of α -aminobutyric acid in aqueous solution and
nitrogen atmosphere and comparison with the degradation in
oxygen atmosphere. 7711
- K.S. Korgaonkar and R.B. Donde. Intern J. Radiation Biol.
5: 67-77 (1962). The effects of ionizing radiations on
L-, DL-phenylalanine and L-, DL-tryptophane studied by
ultra-violet and infra-red spectrophotometry. 7341
- J. Liebster and J. Kopoldova. Czech. Patent 105,916,
Dec. 15, 1962, 3p. (Chem. Abstr. 60: 1264d). Dicarboxylic
acids by the carboxylation of organic acids containing
a methyl or methylene group, through the action of ionizing
radiation. [Soln. of α -aminobutyric acid]. 11110
- P. Riesz and B.E. Burr. Radiation Res, 16: 661-7 (1962).
Some reactions of deuterium atoms in the radiolysis of
amino acids, peptides, thiols and alcohols in heavy water:
10797
- M. Sjoestedt and L.E. Ericson. Acta Chem. Scand. 16:
1989-98 (1962). The effect of gamma radiation on a
number of water soluble vitamins. 7507
- A.J. Swallow and J.A. Velandia. Nature 195: 798-800 (1962).
Oxygen effect as an explanation of differences between
the action of α -particles and X- or γ -rays on aqueous
solutions of amino-acids and proteins. 7136
- Y. Ueno and M. Fukuda. Minerva Med. 53: 274-7 (1962). (Nucl. Sci.
Abstr. 17: 20075). Effects of gamma irradiation
on vitamin B₁ in vitro. 7764
- 1961 P. Alexander and D. Rosen. Radiation Res. 15: 475-88 (1961).
A comparison of the effects of X-rays and alpha rays on some
proteins and amino acids in dilute aqueous solution. 5240
- D.W. Grant, S.N. Mason and M.A. Link. Nature 192: 352-3 (1961).
Products of the γ -radiolysis of aqueous solutions. 5154

- 1961 L. Guczi. Kozponti Elelmiszeripari Kutato Intezet Kozlemenyek:
(cont) 33-4 (1961) (Hung). (Nucl. Sci. Abstr. 16: 29018).
Effect of thiourea on the irradiation induced oxidation of
cysteine in aqueous solution. 7150
- H. Hatano. Bull. Inst. Chem. Res. Kyoto Univ. 39: 120-32 (1961).
(Nucl. Sci. Abstr. 15: 19418). Oxidative radiolysis of
amino acids, peptides and proteins in aqueous solutions by gamma
irradiation. 3929
- H. Hatano. Proc. Japan Conf. Radioisotopes, 4th: 401-5 (1961) (Jap).
(Nucl. Sci. Abstr. 17: 29931). On the mechanism of
radiolysis of amino acids, peptides and proteins by γ -rays. 8015
- M. Jovic and Z. Supek. Nature 191: 383-4 (1961). Formation
of 5-hydroxytryptamine in an aqueous solution of 5-hydroxytrypto-
phan treated with X-rays. 4315.
- G. Peter, T. Wieland and B. Rajewsky. Z. Naturforsch. 16b:
198-206 (1961) (Ger). The indirect effects of X-ray beams on
lysine. 3943
- 1960 K. Flemming. Naturwissenschaften 47: 205-6 (1960) (Ger).
Paper chromatographic detection of histamine in X-irradiated
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- W.M. Garrison. UCRL-9218, June 20, 1960, 11p. (Nucl. Sci.
Abstr. 14: 25505). Mechanisms of radiation-chemical
reaction in biochemical systems. 3813
- H. Hatano. J. Radiation Res. (Japan) 1(1): 23-7 (1960).
Studies on the radiolysis of amino acids and proteins. I.
On the radiolytic oxidation of sulfhydryl groups. 5688
- H. Hatano. J. Radiation Res. (Japan) 1: 28-37 (1960). (Nucl.
Sci. Abstr. 15: 5087). Studies on radiolysis of
amino acids and proteins. II. On radiolytic deamination
of amino acids in aqueous solutions by gamma irradiation. 4045
- H. Hatano. J. Radiation Res. (Japan) 1: 38-45 (1960). (Nucl.
Sci. Abstr. 15: 5088). Studies on radiolysis of
amino acids and proteins. III. On radiolysis of peptides
and proteins in aqueous solutions by gamma irradiation. 4046
- A.P. Ibragimov and G.A. Brodskaya. Tr. 2-go (Vtorogo) Vses.
Soveshch. po Radiats. Khim., Akad. Nauk SSSR, Otd. Khim. Nauk,
Moscow 1960, p.256-62. (Publ. 1962) (Russ). (Chem. Abstr. 58:
5182c). The effect of γ -radiation on aqueous solutions of
tyrosine and phenylalanine. 11477

- 960 R. Kock and J. Franz. Intern. J. Radiation Biol. 2: 383-92 (cont)(1960)(Ger). Effects of light and ionizing radiation on the auto-oxidation of cysteine and the reaction between cysteine and 3,4-benzopyrene. 3849.
- P. Markakis and A.L. Tappel. J. Am. Chem. Soc. 82: 1613-17 (1960). Products of γ -irradiation of cysteine and cystine. 3781
- 1959 S.A. Barker, P.M. Grant, M. Stacey and R.B. Ward. J. Chem. Soc.: 2648(1959). Effects of γ -radiation. Part I. Polymer formation from sugars, hydroxy-acids, and amino-acids. 5110.
- S.A. Barker, P.M. Grant, M. Stacey and R.B. Ward. Nature 183: 376-7 (1959). Effects of gamma-radiation on some carbohydrates, hydroxyacids and amino-acids in aqueous solutions. 2262
- W.M. Garrison. UCRL-8719, April 1959. (Nucl. Sci. Abstr. 13: 14265). Indirect action of ionizing radiation on some organic compounds containing the C-N bond. 4784
- J. Kopoldova, J. Kolousek, A. Babicky and J. Liebster. A/CONF. 15/P/2117. (Nucl. Sci. Abstr. 13: 6490). The radiochemical degradation of a number of amino acids. 1938
- G. Peter. Z. Naturforsch. 14b: 135 (1959). The indirect effects of X-radiation on amino acids. 3277
- 1958 K. Dose and B. Rajewsky. Biochem. Z. 330: 131-40 (1958). The chemistry of direct and indirect radiation effects: amino acids. 3470
- S. Okada. Actions Chim. Biol. Radiations (4): 46-9 (1958). Formation of hydroperoxides from certain amino acids and peptides in aqueous solutions by irradiation in presence of oxygen. 4946
- J. Weiss. AERE I/R 2736, Nov. 1958. (Nucl. Sci. Abstr. 14: 1281). Effects of radiations on aqueous systems under aerobic and anaerobic conditions. 4372
- 1957 M.A. Khenokh and E.M. Lapinskaya. Tr. 1-go (Pervogo) Vses. Soveshch. po Radiats. Khim., Akad. Nauk SSSR, Otd. Khim. Nauk, Moscow 1957, p.182-7. (Chem. Abstr. 53: 12020b). Action of cobalt-60 γ -radiation upon albumins and amino acids. 5019
- 1956 E. Collinson and A.J. Swallow. Chem. Rev. 56(3): 471-568 (1956). The radiation chemistry of organic substances. 56-11

- 1956 W.M. Garrison and B.M. Weeks. J. Chem. Phys. 24: 616 (1956).
(cont) Mechanism in the radiolysis of aqueous glycine solutions. 2832
- W.M. Garrison and B.M. Weeks. J. Chem. Phys. 25: 585 (1956).
Mechanism in the radiolysis of aqueous solutions. II. 2829
- J. Nosworthy and C.B. Allsopp. J. Colloid Sci. 11(4): 565 (1956). Effects of X-rays on dilute aqueous solutions of amino acids. 6774
- 1955 E.S.G. Barron, J. Ambrose and P. Johnson. Radiation Res. 2(2): 145-50 (1955). Studies on the mechanism of action of ionizing radiation. XIII. The effect of X-irradiation on some physico-chemical properties of amino acids and proteins. 376
- M.A. Khenokh and E.M. Lapinskaya. Dokl. Akad. Nauk SSSR 102: 993-G (1955). Effect of the beta radiation of radioactive phosphorus isotope (P^{32}) on amino acids. 1186
- C.R. Maxwell, D.C. Peterson and W.C. White. Radiation Res. 2(5): 431-8 (1955). The effect of ionizing radiation on amino acids. III. The effect of electron irradiation on aqueous solutions of glycine. 387
- J. Rowbottom. J. Biol. Chem. 212: 877 (1955). The radiolysis of aqueous solutions of tyrosine. 3499
- B. Shapiro and L. Eldjarn. Radiation Res. 3(3): 255-66 (1955). The effects of ionizing radiation on aqueous solutions of cysteamine and cystamine. 363
- N.E. Sharpless, A.E. Blair and C.R. Maxwell. Radiation Res. 2: 135-44 (1955). The effect of ionizing radiation on amino acids. II. The effect of X-rays on aqueous solutions of alanine. 1734
- N.E. Sharpless, A.E. Blair and C.R. Maxwell. Radiation Res. 3(4): 417-22 (1955). The effect of ionizing radiation on amino acids. IV. pH effects on the radiation decomposition of alanine. 360
- 1954 J. Loiseleur. Compt. Rend. 239: 1544-6 (1954). Inhibition of radiosynthesis by oxygen acceptors. 1382
- G.G. Jayson, G. Scholes and J. Weiss. Biochem. J. 57: 386 (1954). Action of X-rays on tryptophan in aqueous solution. 798
- C.R. Maxwell, D.C. Peterson and W.C. White. Radiation Res. 1: 552 (1954). The chemical effects of 150-kv electrons on aqueous glycine. 386

- C.R. Maxwell, D.C. Peterson and N.E. Sharpless. Radiation Res. 1: 530-45 (1954). The effect of ionizing radiation on amino acids. I. The effect of X-rays on aqueous solutions of glycine. 09
- 1953 S.L. Whitcher, M. Rotheram and N. Todd. Nucleonics 11(8): 30-3 (1953). Radiation chemistry of cysteine solutions. 494
- W.C. White. Arch. Biochem. and Biophys. 47: 225 (1953). An after effect in irradiated glycine solutions. 808
- 1952 M.G. Alder and H. Eyring. Nucleonics 10(4): 54-7 (1952). An approach to the kinetics of radiation-induced decomposition of certain organic molecules in solution. 492
- B.E. Proctor and D.S. Bhatia. Biochem. J. 51: 535 (1952). Cathode-ray irradiation of amino acids. 794
- M. Rotheram, N. Todd and S.L. Whitcher. Naturwissenschaften 39: 450-1 (1952). Decomposition of cystine by irradiation of its aqueous solutions. 478
- A.J. Swallow. J. Chem. Soc.: 1334-9 (1952). The action of γ -radiation on aqueous solutions of cysteine. 636

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