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66-290

FETIZON M., GORE J.

Specific deuteration β to an oxo group; reduction of α, β-ethylenic ketones with Li and deuterated propylamine.

Tetrahedron Letters **1966** (5), 471
CA **64**, 9525e (1966)

See also **66-292**. Succinate-2-d.

1.0.3 — *AROMATIC COMPOUNDS*

66-291

FISCHER M., DJERASSI C.

Massenspektrometrie und ihre Anwendung auf strukturelle und stereochemische Probleme, LXXXVII.
Möglichkeit von Alkylwanderungen bei aromatischen Verbindungen.

Chem. Ber. **99**, 750 (1966)

1-(d_9-tert-Butyl)-2-phenylethane from Et. phenethylmalonate, + CD_3I, redn. with $LiAlD_4$, formation of the di-tosylate and again redn. with $LiAlD_4$. Pivalinic acid, $LiAlD_4$ redn. tosylation and reaction with C_6H_5O-Na→ neopentyl phenylether-α,α-d_2.

1.0.4 — *HETEROCYCLIC COMPOUNDS*

1.0.5 — *CARBOHYDRATES*

1.0.6 — *PEPTIDES, AMINO ACIDS, PROTEINS*

66-292

SPRECHER M., SWITZER R. L., SPRINSON D. B.

Stereochemistry of the glutamate mutase reaction.

J. Biol. Chem. **241**, 864 (1966)

4-Deuterioglutamic acid by incubation in D_2O of ammonium mesaconate with an extract of Clostridium tetanormorphum. (R)-Succinate-2-d from (2S, 3R)-aspartic acid-3-d by treating with $NaNO_2$/NaBr-HBr and hydrogenation.

1.0.7 — *STEROIDS*

1.1 — Tritium compounds

1.1.1 — *GENERAL*

66-293

YAVORSKY P. M., GORIN E.

Production of tritiated organic compounds U. S. 3.230.261, Jan. 18, 1966, Appl. May 4, 1962.

CA **64**, 9527c (1966)

Neutral or acidic compds. contg. aromatic H, tertiary H, or α-H were tritiated by acid exchange with tritiated H_3PO_4. BF_3 contg. 1-3 T atoms/mol.

66-294

MADDOCK A. G.

Chemical effects of nuclear transformations. Pages 7-16 of Primera Conferencia Interamericana de Radioquimica. 1965.

N. S. A. **20**, 9019 (1966)

Chemical effects of nuclear transformations are illustrated on the reaction of tritium produced by $^3He(n,p)T$ reactions with hydrocarbons.

1.1.2 — *ALIPHATIC COMPOUNDS*

66-295

BOHLMANN F., WOTSCHOKOWSKY M., HINZ U., LUCAS W.

Polyacetylenverbindungen, XCV.
Über die Biogenese einiger Thiophenverbindungen.

Chem. Ber. **99**, 984 (1966)

1-Hexen-3,5-diyne-1,2-^{3}H + KOBr, + 2-hepten-4,6-diyne → trideca-1,11-diene-3,5,7,9-tetrayne-1,2-^{3}H; yield: 28%, sp. act. 4.0×10^{9} ipm/mmole.

66-296

BOHLMANN F., FLORENTZ G.

Polyacetylenverbindungen, XCVI. Über die Biogenese der Spiroketalenoläther-polyine.

Chem. Ber. **99**, 990 (1966)

Prepn. of penta-1,3-diyne-5-^{3}H (sp. act. 1.60 mCi/mmole), 6-tetradecene-8,10,12-triyn-5-on-1-ol-14-^{3}H and 5-tridecene-7,9,11-triyn-4-on-1-ol-13-^{3}H.

1.1.3 — *AROMATIC COMPOUNDS*

1.1.4 — *HETEROCYCLIC COMPOUNDS*

1.1.5 — *CARBOHYDRATES*

1.1.6 — *PEPTIDES, AMINO ACIDS, PROTEINS*

66-297

JARNUM S.

Radioisotope techniques for the study of protein turnover. Pages 93-103 of STI/DOC/10/45 (I.A.E.A.).

N.S.A. **20**, 10561 (1966)

Review on biological labeling involving the use of amino acide labeled with isotopes such as ^{35}S, ^{14}C, ^{3}H, or ^{15}N; and in vitro labeling normally involving radioiodinated proteins. Data on human plasma protein degradation obtained with radioiodinated plasma proteins are tabulated.

66-298

JEEJEEBHOY K. N.

The preparation of ^{3}H-labeled proteins. Pages 41-7 of STI/DOC/10/45 (I.A.E.A.).

N.S.A. **20**, 10945 (1966)

Biosynthesis or by exchange labeling is reviewed. A brief review is presented of the three main steps of the purification process for the latter case: removal of labile ^{3}H and insoluble denatured protein; dialysis to remove non-protein fragments of low molecular weight; and preparative chromatography, electrophoresis or crystallization to separate chemically labeled protein. Effects of ^{3}H-labeling by the exchange process on chemical properties of enzymes, albumin, antibodies, and insulin and on biological properties of antibodies, albumin, and insulin are discussed.

1.1.7 — *STEROIDS*

66-299

RUSE J. L., SOLOMON S.

The isolation and origin of urinary 16α-hydroprogesterone.

Biochemistry **5**, 1072 (1966)

Labeled 16α-hydroxypregnenolone by incubation of 1 mCi of (7-^{3}H)pregnenolone and 7.1 mg of pregnenolone with a strain of streptomyces roseochromogenus. Sp. act. 1.28×10^{8} cpm/mg.

66-300

RUSE J. L., SOLOMON S.

The in vivo metabolism of 16-α-hydroxy-progesterone.

Biochemistry **5**, 1065 (1966)

Labeled 16α-hydroxyprogesterone was prepared by the microbiological hydroxylation of (4-^{14}C)-progesterone or (7-^{3}H)progesterone. (Sp. act. 3.7×10^{5} cpm/mg and 2.8×10^{7} cpm/mg resp.).

1.2 — Carbon-14 compounds

1.2.1 — *GENERAL*

1.2.2 — *ALIPHATIC COMPOUNDS*

66-301

MARTINOTTI F., FAUCITANO A.

Synthesis of barbituric-4-^{14}C and -5-^{14}C acids from diethyl oxalacetate-3-^{14}C.

Ric. Sci. Rend., Sez. A **8**, 403 (1965)

CA **64**, 9719h (1966)

Prepn. of C_3O_2 by pyrolysis of oxalacetate-3-^{14}C (4.85 μCi/mmole)→ diethylmalonate → title compds. sp. act. 0.88 μCi/mmole; radiochem. Yield: 7.3%.

66-302

BARET C., MITTA A. E. A., PICHAT L.

Synthesis of stearic acid-1-^{14}C. Pages 311-14 of Primera Conferencia Interamericana de Radioquimica, 1965.

N. S. A. **20**, 8977 (1966)

n-Heptadecyl bromide purified by gas chromatography to a purity of 98.5%, Grignard reaction + $^{14}CO_2$. Sepn. purifn. on a polyethylene column.

66-303

GROVE J. F., McCLOSKEY P., MOFFATT J. S.

Viridin. Part V. Structure.

J. Chem. Soc. (C), 1966, 743.

By growing Gliocladium virens in surface cultures and incubating with dl-mevalonic lactone-2-^{14}C (250 μCi) viridin-^{14}C was obtained.

1.2.3 — *AROMATIC COMPOUNDS*

66-304

SEKI S., NISHIHATA K., SHIGEMATSU A.

Syntheses of ^{14}C, T double labeled propargyl aryl ethers and propargylarylcarbinol.

Radioisotopes (Tokyo) **14**, 480 (1965)
CA **64**, 9623f (1966)

Propargyl-β,γ-$^{14}C_2$ (I), and -α-^{14}C alc. (II) from acetylene-1,2-$^{14}C_2$ and paraformaldehyde-^{14}C, resp.; I in 68% and II, in 48.3% yield. T-labeled *p*-hydroxybenzaldehyde (III), *p*-acetamidophenol (IV), *o*-cresoxyacetic acid (V), and *p*-chlorobenzaldehyde thiosemicarbazone by the contact method and V and VI converted, resp., to *o*-cresol (VII) and *p*-chlorobenzaldehyde (VIII). Condensation of III, IV, VII and VIII with the bromide analog of I → the following compds. (% chem. yield, and % radiochem. yield and sp. act. (μCi/mmole) based on ^{14}C and T given): *p*-propargyl-β,γ-$^{14}C_2$-oxybenzaldehyde-t thiosemicarbazone, 30.8, 29.0, 20.8, 9.72 and 152; N-(*p*-propargyl-β,γ-$^{14}C_2$-oxyphenyl-t)-N′-allylthiourea 20.8, 19.3, 18.5, 9.82 and 89.7; γ-iodopropargyl-β,γ-$^{14}C_2$ *o*-tolyl-t ether, 37.6, 34.5, 45.9, 0.92 and 6.9; and *p*-chlorophenyl-γ-iodopropargyl-β,γ-^{14}C-carbinol, 10.1, 10.1, 9.8, 2.0 and 27.6.

1.2.4 — *HETEROCYCLIC COMPOUNDS*

66-305

FITZGERALD D. K., EBNER K. E.

Enzymic synthesis of uridine diphosphoglucose-^{14}C.

Anal. Biochem. **15**, 150 (1966)

UDP glucose-^{14}C in essentially quantitative radiochemical yields from glucose-^{14}C-1-P and UTP by use of a purified UDPG pyrophosphorylase. The reaction is driven to completion by the addition of inorganic pyrophosphatase and the UDP glucose-^{14}C is isolated from the reaction mixture by chromatography on DEAE-HCO_3 with triethylamine-bicarbonate.

66-306

LIN Tsau-Yen, ELBEIN A. D., SU Jong-Ching

Substrate specificity in pectin synthesis.

Biochem. Biophys. Res. Commun. **22**, 650 (1966)

Preparation of the radioactive galacturonic acid nucleotides (ADP-, CDP-, GDP-, TDP-, UDP-) from D-galactose-1-^{14}C (0.9 μCi/μmole) by phosphorylation with ATP and galactokinase and oxidn. to D-galacturonate-1-^{14}C-1-P by catal. oxidn. using the method of Marsh. Average yields based on radioactivity of GalUA-1-P: 30-45%.

1.2.5 — *CARBOHYDRATES*

66-307

O'BRIEN P. J., CANADY M. R., HALL C. W.

Transfer of N-acetylneuraminic acid to incomplete glycoproteins associated with microsomes.

Biochim. Biophys. Acta **117**, 331 (1966)

^{14}C-Labeled CMP-N-acetylneuraminic acid of high sp. act. from glucosamine-^{14}C (100 μCi, 1 μmole) by modified existing procedures. Yield: from 4% to 10% of the

radioactivity. Sp. act. about the half of the starting material.

66-308

FINLAYSON A. J.

Degradation of the carbon skeleton of glutamic acid.

Can. J. Biochem. **44**, 397 (1966)

Glutamic acid-2-^{14}C was degraded in such a way that its individual carbon atoms were separately recovered as carbon dioxide.

See also **66-305**: glucosyl-^{14}C ester,
66-306: galacturonic acid-1-^{14}C.

1.2.6 — *AMINOACIDS, PEPTIDES, PROTEINS*

See **66-297**:
66-298: reviews on methods of labeling proteins.

1.2.7 — *STEROIDS*

66-309

HALMOS M., SZABO J.

Steroids. III. Synthesis of 16α-carbomethoxy-carboxy-^{14}C-progesterone. Mechanism of alkaline hydrolysis of 3β,20β-dihydroxy-16α-cyano-4-pregnene.

Acta Univ. Szeged, Acta Phys. Chem. **11**, 107 (1965)
CA **64**, 9790e (1966)

3β-Hydroxy-16α-cyano-^{14}C-5-pregnen-20-one from 3β-acetoxy-5,16-pregnadien-20-one with K^{14}CN, redn. with $NaBH_4$, alk. hydrolysis, oxidn. → title compd.

66-310

DVORNIK D., KRAML M., BAGLI J. F.

Agents affecting lipid metabolism. XVIII. A 7-Dehydrocholesterol Δ^7-reductase inhibitor (AY-9944) as tool in studies of Δ^7-sterol metabolism.

Biochemistry **5**, 1060 (1966)

(4-^{14}C)Δ^7-Cholestenol by addn. of Na to a refluxing soln. of (4-^{14}C)7-dehydrocholesterol (I) in 2- propanol. Unreacted I was removed by oxidn. under irradn. Yield: 31 mg from 100 mg I with a sp. act. of 0.066 μCi/μmole.

See also **66-300**: 16-α-hydroxyprogesterone-^{14}C.

1.3 — Halogen labeled compounds

66-311

SERVIAN J. L.

Preparation of L-thyroxin labeled with ^{131}I. Pages 293-6 of Primera Conferencia Interamericana de Radioquimica.

N.S.A. **20**, 8974 (1966)

In order to prepare thyroxine labeled with ^{131}I, labeling methods proposed in the literature were reviewed. The problem of detection and determination was studied and the techniques for labeling and purification were investigated. The efficiency of various solvents for paper chromatographic separation of thyroxine was investigated. A technique for the preparation of low specific activity is given.

66-312

LEMARCHANG-BERAUD Th., FELBER J.-P., VANNOTTI A.

Development of a radioimmunologic method for the determination of thyroid-stimulating hormones: preliminary results.

Schweiz. Med. Wochschr. **95**, 772 (1965)
N.S.A. **20**, 12755 (1966)

66-313

BERSON S. A., YALOW R. S.

Considerations in the preparation of ^{131}I-labeled hormones. Pages 29-33 of STI/DOC/10/45 (I.A.E.A.).

N.S.A. **20**, 10943 (1966)

Procedures for preparing ^{131}I-labeled hormones are reviewed. Problems unique to ^{131}I-labeled hormones are determined by the special purposes to which the labeled compound is to be put and distinctive physical and chemical characteristics of protein and polypeptide hormones. Methods for iodination and purification are discussed.

66-314

HORIUCHI K., BEHRENS H.

Preliminary study on the mechanism of the reaction of formation of Hippuran-^{131}I. Pages 273-9 of Primera Conferencia Interamericana de Radioquimica, 1965.

N.S.A. **20**, 8973 (1966)

The labeling reaction for Hippuran-^{131}I was studied using paper chromatography for analysis of the reaction products. The effects of pH, light, temperature, variable concentrations of Hippuran, iodine, and iodate are discussed.

66-315

MITTA A. E. A., CAMIN L. L.

Preparation of ^{131}I-Allyl-Inulin. Com. Nac-E. At. (Argentina), 1965, Rep. No. 161.

N.S.A. **20**, 12912 (1966)

Labeling allylinulin by ^{131}ICl. Radiochemical yield of 70% in only one hour.

66-316

MITTA A. E. A., CAMIN L. L.

Preparation of compounds labeled with ^{131}I at the National Atomic Energy Commission of Argentina. Pages 297-300 of Primera Conferencia Interamericana de Radioquimica, 1965.

N.S.A. **20**, 8975 (1966)

The techniques used for the routine preparation of iodoalbumin-^{131}I, sodium *o*-iodohippurate-^{131}I, rose bengal-^{131}I, oleic acid, and triolein-^{131}I are reported.

66-317

McFARLANE A. S.

The preparation of ^{131}I- and ^{125}I-labeled plasma proteins. Pages 3-6 of STI/DOC/10/45 (I.A.E,A.).

N.S.A. **20**, 10941 (1966)

Procedures for labeling plasma proteins with iodine radioisotopes are reviewed. Factors discussed include: protein denaturation; iodination; levels of substitution; carriers; removal of ^{131}I; self-radiation effects; and testing of labeled proteins.

66-318

HUEGLI H.

The labeling of proteins with ^{131}I. Pages 7-8 of STI/DOC/10/45 (I.A.E.A.).

N.S.A. **20**, 10942 (1966)

Prepn. of a product containing approximately 150 μCi ^{131}I per 10 mg of human albumin per ml with an average of 0.7 atoms of iodine per protein molecule with iodine monochloride in 3 min. When stored in a refrigerator at 5 °C, less than 1% unbound iodine separates out in the course of a month.

66-319

HUEGLI H.

The preparation of ^{131}I-polyvinylpyrrolidone. Pages 49-53 of STI/DOC/10/45 (I.A.E.A.).

N.S.A. **20**, 10946 (1966)

Starting with 100 g of vinylpyrrolidone and 200 mg of α,α′-azodiisobutyronitrile, 30 to 40 g of PVP with an average molecular weight between 65,000 and 85,000 are produced. PVP fractionation is achieved by precipitation. Labeling is done by adding ^{131}I-labeled-NaI to the PVP and exposing the solution to UV radiation for 5 to 6 hrs.

66-320

SHIOKAWA T., SATO T., IZAWA G., KONDO K., SATO. K.

The chemical effects associated with the (n, 2n) reactions in organic halides.

Nippon Kagaku Zasshi **86**, 1006 (1965)
N.S.A. **20**, 9007 (1966)

The overall organic yields in bromides were apparently higher than those from the (*n*, γ)reaction, while iodides gave similar results in both nuclear reactions. The high-energy reaction yields were in agreement with those in the (*n*, γ)reaction. The effects of temperature and radiation expected on the organic yields in the thermal range were investigated.

1.4 — Phosphorus-32 compounds

1.5 — Sulfur-35 compounds

See **66-297**: review on labeling of proteins.

1.6 — Oxygen labeled compounds

66-321

SHAPIRO S. S., DENNIS D.

Lactic acid racemization in CL. Butylicum: ^{18}O exchange studies.

Biochem. Biophys. Res. Commun. **22**, 635 (1966)

Na Pyruvate in $H_2{}^{18}O$ enriched with 10 atoms % excess, + $NADH_2$, + $H_2O \rightarrow$ lactic acid-(hydroxy-^{18}O).

1.7 — Nitrogen-15 compounds

See **66-297**: review on labeling of proteins.

1.8 — Miscellaneous

66-322

WALDMANN T. A.

The preparation of ^{51}Cr-albumin. Pages 35-40 of STI/DOC/10/45 (I.A.E.A.).

N.S.A. **20**, 10944 (1966)

Carrier-free chromium-51-labeled chromic chloride was incubated with human serum albumin. Free and weakly bound Cr was removed by passage through a column packed with Amberlite resin. From 23 to 50% of the ^{51}Cr initially incubated with the albumin was found bound to the final product, and from 90 to 96% of the radioactivity in the final product was precipitated by 10% phosphotungstic acid.

1.9 — Carbon-13 compounds

2 — RADIODECOMPOSITION, STABILITY, STORAGE

66-323

MOSES V.

The instability of pyruvate-^{14}C. UCRL-11743, Oct. 1964, 8 pages.

N.S.A. **20**, 10934 (1966)

Pyruvate-^{14}C was analyzed for impurities and decomposition by one-dimensional chromatography. In both stored and newly prepared pyruvate-^{14}C decomposition products and/or impurities were found. Thus, further attempts to use this substance as a metabolic substrate were abandoned.

66-324

BIANCHI G., HEGESIPPE E., MEOZZI A., ROSA U., SOSI S.

Effect of autoradiolysis on the renal clearance of ^{131}I-labeled hypaque and hippuran.

Minerva Nucl. **9**, 152 (1965)

N.S.A. **20**, 8782 (1966)

When, in the solutions of radioiodine-labeled hypaque and hippuran, a fraction of the radioiodine is present in inorganic form, the usefulness of these tracers in the study of renal function is severely limited. The formation of inorganic iodine in the hypaque or hippuran solutions may be the result of decomposition reactions unrelated with radioactivity, or of autoradiolysis. Results are reported from a study carried out with the purpose of finding whether, by changing in some way the conditions of preparation and storage of the labeled molecules, this effect can be minimized.

See also **66-317**: radioiodine labeled plasma proteins.

66-318: ^{131}I- human serum albumin.

3 — PURIFICATION, SEPARATION

66-325

PETROVIC J., PETROVIC S.

Purification of labeled ribonucleic acids from anionic contaminants.

Anal. Biochem. **15**, 187 (1966)

Purification could be effected in single-step procedure, using a highly cross-linked polystyrene anion exchanger.

66-326

MITTA A. E. A., CAMIN L. L.

Separation of ^{131}I-Rose Bengal by Thin-Layer Chromatography. Com. Nac. E. At. (Argentina), 1965, Rep. Nr. 162.

N.S.A. **20**, 12763 (1966)

A chromatographic method for the separation of ^{131}I-labeled Rose Bengal with a

specific activity of 5 to 7 mCi/mg is presented. The method can be used for quantities of 1 mg.

See also **66-335**: radiochemical purity of chemicals.

4 — ANALYSIS

4.1 — Determination of activity

66-327

JUVA K., PROCKOP D. J.

Modified procedure for the assay of ^{3}H- or ^{14}C-labeled hydroxyproline.

Anal. Biochem. **15**, 77 (1966)

Previously published procedures have been modified, so that the assay is simpler, more reproducible, and less affected by the presence of other ^{14}C- or ^{3}H-labeled compounds.

66-328

HOFFMANN W.

Measurement of low-energy β emitters in heterogeneous phases with liquid scintillators.

Radiochim. Acta **4**, 222 (1965)
N.S.A. **20**, 12804 (1966)

Examples one with a suspension of polymer scintillator in ^{3}H- and ^{14}C-containing water and another with a sample suspension in the scintillator solution ($BaCO_3$-^{14}C, ^{3}H-labeled polymers after dispersion in toluene/Aerosil).

66-329

CAYEN M. N., ANASTASSIADIS P. A.

A simplified technique for the liquid scintillation measurement of radioactivity on paper chromatograms containing toluene-insoluble ^{14}C- and ^{3}H-labeled compounds.

Anal. Biochem. **15**, 84 (1966)

A band of the chrom. was shaken with methanol and both the methanol and the filter paper band flooded with scintillation fluid and the contents counted.

66-330

JEEJEEBHOY K. N.

Radioisotope techniques for the study of protein absorption. Pages 141-8 of STI/DOC/10/45 (I.A.E.A.).

N.S.A. **20**, 10566 (1966)

Properties of ^{131}I-labeled proteins and ^{3}H-labeled albumin are discussed.

66-331

MOODY A. J., FELBER J.-P.

Critical study of the radioimmunologic method of determination of insulin (Method of Hales and Randle).

Schweiz, Med. Wochschr. **95**, 766 (1965)
N.S.A. **20**, 12754 (1966)

In particular, the use of ^{131}I-insulin in a radioassay technic is critically examined. One of the questions is whether the antigenicity of ^{131}I-labeled insulin is identical to that of native insulin.

4.2 — Apparatus

4.3 — Degradation

66-332

JACKANICZ T. M., BYERRUM R. U.

Incorporation of aspartate and malate into the pyridine ring of nicotine.

J. Biol. Chem. **241**, 1296 (1966)

A unique nicotinic acid degradation was devised which permitted the isolation of each individual carbon atom of the pyridine ring.

66-333

BOHLMANN F., JENTE R.

Polyacetylenverbindungen, XCVII. Zur Biogenese der Phenylpolyine.

Chem. Ber. **99**, 995 (1966)

Degradation routes are outlined for different phenyl polyynes isolated after application of acetate-^{14}C as precursor (capillinol acetate, " frutescin ").

5 — MISCELLANEOUS

66-334

ROTH L. J. ed.

Isotopes in experimental pharmacology, Conference, Chicago, June 7-9, 1964.

Chicago, The University of Chicago Press, 1965. 502 pages.
N.S.A. **20**, 10509 (1966)

Thirty-six papers on the isotopic labeling of drugs, biological applications of activation analysis, autoradiographic studies of the distribution of drugs, and related problems.

66-335

RECCHI N. V.

Pharmaceutical control of radioactive compounds at the National Atomic Commission of Argentina. Primera Conferencia Interamericana de Radioquimica. 1965, pages 307-10.

N.S.A. **20**, 8976 (1966)

Routine physical, chemical, and biological tests made to ensure the radiochemical purity of pharmaceuticals are outlined. The techniques used to measure the radiochemical yield and purity are outlined. A tabulation is given of the compounds routinely prepared.