Tautomeric forms of bases

Tautomeric forms of nitrogenous bases.

Structural isomers of chemical compounds which readily interconverthis article require further citations for verification. Please help improve this article by adding citations to reputable sources. Unworn material can be challenged and removed.Find Sources: Ã¨ "Tautomer" Ã¨ â¨ Â· Newspapers Â· books Â· ScholarÃ¢ Â· JSTOR (July 2015) (Learn how and when to remove this message) the two Tautomers of an amino acid: (1) neutral zwitterionic forms and (2). Tautomani (/ Ã"tÃ© "Ã" teÃ© â¢ mÃ© â¢ r /) [1] are structural isomers (constitutional isomers) of chemical compounds that are easily interconverted. [2] [3] [4] [5] This reaction commonly results in the transfer of a hydrogen atom. For example, tautomerism is relevant to the behaviour of amino acids and nucleic acids, two of the fundamental blocks of life. The concept of tautomerizations is called tautomerism. Tautomerism is also called desmotropism. The chemical reaction that preserves the two is called tautomerization. Care should be taken not to confuse tautomans with representations of "contributing structures" in chemical resonance imaging. Tautomans are distinct chemical species and can be identified as such by their different spectroscopic data, [6] while resonance structures are only convenient representations and do not exist physically. Examples Some examples of tautometers Keto-ENOL Tautomerization typically strongly favors the tautomeric keto, but an important exception is the case of 1,3-diketones such as acetylacetone. Tautomerization is pervasive in organic chemistry. It is typically associated with polar molecules and ions containing functional groups that are at least weakly acidic. The most common tautomers exist in pairs, which means that hydrogen is in one of the two positions, and even more specifically the most common shape involves a mutable of hydrogen with a double bond: hÃ¢'xÃ¢'y = z Ã¨ â¡ Å X = yÃ¢'zÃ¢'h. Common tautomeric pairs include: [7] Ketone Ã¢ â¨¬ "Enol: hÃ¢'oÃ¢'c = cÃ¢ Å o = cÃ¢cÃ¢h, see KetoÃ¢ â¨¬" ENOL TAUTomerismo Enamine Ã¢ â¨ "IMINE: HÃ¢ 'NÃ¢'c = c Ã¡ Å n = cÃ¢'cÃ¢'h cyanamide Ã¢ â¨¬ "carbodiimide Guanidine Ã¢ â¨¬" Guanidine – Guanidine: with a central carbon surrounded by three nitrogenous elements, a group of guanidine allows this transformation Three possible orientations Amide Ã¢ â¨¬ "imidic acid: hÃ¢'nÃ¢'c = o Ã¡ Å n = cÃ¢'oÃ¢'h (e.g. the latter occurs during nitrile hydrolysis reactions) Lattam Ã¢ â¬" Lactim, a cyclic form of starch-imidic acid tautomerism in 2-pyridone and derived structures such as the nucleobases Guanine, Thymine and Cytosine IMINE Ã¢ â¨"IMINE, for example, during the catalyzed pyridoxal phosphate enzymatic reactions R1R2C (= NCHR3R4) Ã¨¨¨ (R1R2Chn =) CR3R4 Nitro Ã¢ â¨ "A cy-nitro (nitronic acid): rr'hcÃ¢ â¨¬" n + (= o) (oÃ¢ â¬") = â¡ Å rr'c = n + (oÃ¢ â¨¬") (oh) nitroso Ã¢ â¨"Oxime: HÃ¢'cÃ¢n = o Ã¢ Å c = nÃ¢'oÃ¢h ketene Ã¢ which involves a triple bond: hÃ¢'c = c = o â¡ Å c â° Ã¡cÃ¢'h amino acid â¬" ammonium carboxylate, which applies to th E Building Blocks of the Proteins. This moves the proton more than two atoms away, producing a rather than move a double bond: H2N−CH2−COOH Normally H3N+−CH2−CO−2 phosphorate: P(OR)2(OH)¯ HP(OR)2(=O) between trivalent phosphor and pentavalent. Prototropy Prototropy is the most common form of tautomerism and refers to the delocalization of a hydrogen atom. [8] Prototropic tautomerism can be considered a subset of acid-base behaviour. Prototropic tautomers are series of issomeric protonation states with the same empirical formula and total charge. Automerizations are catalyzed by:[citation needed] basics, which involve a series of steps: deprotonation, formation of a delocalized anion (e.g. an enolate), and protonation in a different position of the anion; and acids, which involve a series of steps: protonation, formation of a delocalized deprotonation and deprotonation in a different position adjacent to the cation). Glucose can exist both in the form of chain and ring. Two more specific subcategories of tautomerizations: Anularian tautomerism is a type of prototropic tautomerism in which a proton can occupy two or more positions of a heterocyclic system, for example 1H- and 3H-imidazole; 1H-, 2H- and 4H- 1,2,4-triazole; 1H- and 2H- isoindole chain.[9] [7] (See Carbohydrate § Isomerism chain rings-straight.) The tautomeric shift can be described as H−O ∞ C=O ↔ O−C−O−H, where the "brain" indicates the initial absence of a bond. Valence tautomerism Valence tautomerism is a type of tautomerism in which individual and/or double ties are quickly formed and broken, without migration of atoms or groups. [10] It is distinct from prototropic tautomerism, and involves processes with rapid reorganization of binding electrons. Oxepin – Benzene Oxepin Oxepin Oxepin Balance A pair of valence tautomers with formula C6H6O are benzene and oxepin oxide.[10][11] Other examples of this type of tautomerism can be found in bolts, and in open and closed forms of some heteroclis, such as organic azides and tetrazoles,[12] or mesoionic münchnone and acylamino ketene. Valence's tautomerism requires a change in molecular geometry and should not be confused with canonical resonance structures or mesomers. See also the fluxional molecule Favipiravir References "tautomer". Oxford Dictionaries - English. Archived from the original on 2018-02-19. Antonov L (2013). Tautomerism: Methods and Theory (1st ed.). Weinheim, Germany: Wiley-VCH. ISBN 978-327-33294-6. Tautomerism: Concepts and applications in science and technology (1st ed.). Weinheim, Germany: Wiley-VCH. ISBN 978-327-33995-2. Advanced Organic Chemistry (5 ° ed.). New York:Interstcience. PP. 121818181818 "1223. Isbn 978-0-471-58589-3. ^ Katrizky ar, Elguero J, et al. The tautomerism of eterocli. New York: Academic Press. ISBN 978-0-12-020651-3. ^ Smith, Kyle T .; Young, Sherri C .; DeBlasio, James W .; Hamann, Christian S. (27 January 2016). "Measuring the structural and electronic effects on Keto-Enol Equilibrium in 1,3-Dicarbonyl Compounds". Gazette of chemical education. 93 (4): 790-794. doi: 10.1021 / acs.jchemed.5b00170. ^ A b Smith, Michael B .; March, Jerry (2007), Advanced Organic Chemistry: Reactions, Mechanisms, and Structure (6th ed.), New York: Wiley-Interscience, ISBN 978-0-471-72091-1 ^ IUPAC, Compendium of Chemical Terminology, 2nd ed . (The "Gold Book") (1997). Proper online version: (2006a) "tautomerism". doi: 10.1351 / goldbook.T06252 ^ Balabin Roman M. (2009). "The balance automerico and hydrogen moves to the tetrazole and triazole: the analysis of the focal points and the dell'aditio limit". J. Chem. FIS. 131 (15): 154307. bibcode: 2009JChPh.131o4307B. doi: 10.1063 / 1.3249968. AMPD 20568864. [non-primary source needed] [the best source needed] ^ a b IUPAC Compendium of Chemical Terminology, II ed. (The "Old book") (1997). Proper online version: (2006a) "tautomerization" value. doi: 10.1351 / goldbook.V06591.html ^ E. Vogel and Günther H. (1967). "Oxide-Oxepin Benzene Valence Tautomerism". 6 (5): 385â 401. doi: 10.1002 / anie.196703851. ^ Mahesh K. Lakshman, Manish K. Singh, Damon Parrish, Raghavan Balachandran, Day Billy W. (2010). "Azideâ Tetrazole Equilibrium of C-6 Azidopurine Nucleosides and their ligation reactions with Alkynes". 75 (8): 2461â 2473. doi: 10.1021 / jo902342z. PMC 2877261. PMID main 20297785.CS1: more names: list of authors (link) Identification CAS No. 142-08-5 Y 3D model (JSmol) lattimo: Interactive Image: Interactive Image ChEBI CHEBI: 16540 ChEMBL662 Y Y Y ChemSpider 8537 ECHA InfoCard 100 005 019 EC number 205-520-3 KEGG C02502 PubChem CID 8871 RTECS number UV1144050 UNII 6770O3A2I5 Y CompTox Dashboard (EPA) DTXSID2051716 InChI = 1 UBQKCCHYAOITMY-UHFFFAOYSA-N YInChI = 1 / C5H5NO / c7-5-2-1- 3-6-4-5 / h1-4,7HKey: GRFNBEZIAWKNCO-UHFFFAOYATInChI = 1 / C5H5NO / c7-5-3-1-2-6-5 / h1-4H, Oc1ccn1lactam: C1 = CC = NC (= O) 1 Property chemical formula C5H5NO molar mass 95 101 GA · Mola 1 Appearance colorless crystalline 1:39 Density g / cm3 melting point 107.8 degrees C (226.0 degrees F; 380.9 K) boiling point 280 Â ° C (536 Â ° F; 553 K) de solubility in other solvents solubility in water, methanol, acetone Acidity (pKa) UV-vis 11.65 (Î »max) NM (IH 5900, H2O Soln) Crystal structure Crystal structure Ortorhombic molecular shape Planar Moment Moment 4.26 D Hazards D Main hazards Irritating Safety data sheet SEE: GHS data page Pictograms GHS Signal Word Danger GHS Hazard statements H301, H315, H319, H335 GHS precautionary statements P261 , P26 4, P270, P271, P280, P301 + 310, P280, P301 + 310, P280, P301 + 310 + 340, P312, P321 + 340, P312, P321, P330, P312, P321, P330, P332 + 313, P337 + 313, P362, P403 + 233, P405, P501 NFPA 70 4 (Fire Diamond) 2 1 flash point 210 Â° C (410 Â° f; 483Ã¢ k) Related compounds Other 2-pyridinolate anions Other 2-pyridinolate cations Other 2-Hydroxyypyridinium-ions related to functional groups related to alcohol, LacTam, Lactim, Pyridine, correlated Related to Ketone Compound Pyridine, Thymine, Cytosine, Uracil, Benzene Supplementary page index Androperties Refractive index (N), dielectric constant (Î3R), etc. ThermodinamicData Phase BehavesoorsolidÃ¢ â¨¬ "Liquid" Spectral data to UV, IR, NMR, MS gas unless otherwise noted, the data are given for materials in their standard state (at 25Â° C [77 Â° F], 100 Ã¨ kpa). Verify 'VerifyÃ¢ (what is it,?) Infobox references Chemical Compound 2-Pyridone is an organic compound with the formula c5h4nh (o). It's a colorless solid. It is known to form glued hydrogen dimers and is also a classic case of a compound that exists as tautomans. Tautomerism The second tautomer is 2-hydroxypyridine. This Lactim lactam tautomerism can also be exposed in many related compounds. [1] Tautomerism in the solid state The Amide Group can be involved in a bond of hydrogen to other nitrogen-containing species and oxygen. The predominant solid state form is 2-pyridone. This has been confirmed by X-ray crystallography which shows that hydrogen in the solid state is closer to nitrogen than to oxygen (due to the low electron density to hydrogen exact positioning is difficult) and IR spectroscopy, which shows that the longitudinal frequency c = o is present while the OH frequencies are absent. [2] [3] [4] [5] Tautomerism in solution The determination of which of the two tautomeric forms is present in solution has been the subject of many publications. The energy difference seems to be very small and depends on the polarity of the solvent. Non-polar solvents favour the formation of 2-hydroxypyridine while polar solvents such as alcohols and water favour the formation of 2-pyridone. [1] [6] [7] [8] [9] [10] [11] [12] [13] The energy difference for the two tautomers in the gas phase was measured by IR spectroscopy from 2.43 to 3.3 kJ/mol for the solid state and 8.95 kJ/mol and 8.83 kJ/mol for the liquid state. [14] [15] [16] Tautomerization Mechanism A The single molecular tautomerization has a forbidden subsimated transition state 1-3 and thus has a high energy barrier for this which was calculated with theoretical methods of 125 or 210 kj / mol. Direct tautomerization is vigorously not favored. There are other possible mechanisms for this tautomerization. [16] Dimerization 2-pyridone and e It can form dimers with two hydrogen bonds. [17] Solid state aggregation in solid state, dimeric modulus is not present; The 2 Pyridones form a helical structure on the hydrogen bonds. Some 2 substituted pyridones form the solid-state dimer, e.g. 5-methyl-3-carbonitrile-2-pyridone. The determination of all these structures was carried out by x-ray crystallography. In the solid state hydrogen is located closer to oxygen, so it might be considered right to call the colorless crystals in the 2-pyridone flask. [1] [2] [3] [4] [5] Aggregation in solution is present the dimeric modulus; The ratio between dimerization depends strongly on the polarity of the solvent. Polar and protical solvents interact with hydrogen bonds and the most monomer is formed. Hydrophobic effects in non-polar solvents lead to a predominance of dimer. The ratio of tautomeric forms also depends on the solvent. All possible tautomers and dimers can be present and form an equilibrium, and the exact measurement of all equilibrium constants in the system is extremely difficult. [17] [18] [19] [20] [21] [22] [23] [24] [25] [26] (NMR-Spectroscopy is a slow method, high resolution solvent IR spectroscopy is difficult, wide absorption in UV spectroscopy makes it difficult to discriminate 3 and more similar molecules). Some publications focus only on one of the two possible patterns and neglect the influence of the other. For example, calculating the energy difference of the two tautomers in a non-polar solution will lead to an incorrect result if a large amount of the substance is on the side of the dimer in an equilibrium. Mechanism of tautomerization B Direct tautomerization is not energetically favored, but a dimerization followed by a double transfer of proton and dissociation of the dimer is a catalytic auto path from one tautomer to another. Protic solvents also mediate proton transfer during tautomerization. 2-Pyrone synthesis can be achieved by a cycling reaction and converted to 2-pyridone by an ammonia exchange reaction: pyridine forms an oxidation oxide with some oxidation agents such as hydrogen peroxide. This pyridine-N-oxide undergoes a reorganization reaction to 2-pyridone in acetic anhydride: [27] [28] [29] in the Guareschi-Thorpe condensation Cynoacetamide reacts with a 1,3-DIKETONE to 2 pyridones. [18] [19] The reaction is named after ICILIO GUALSCHI and Jocelyn Field Thorpe. [20] [21] Chemical properties Catalytic activity 2-pyridone catalyzes a variety of proton-dependent reactions, e.g. aminolysis of esters. In some cases, Molten 2-Pyridone is used as a solvent. 2-Pyridone has a large effect on the reaction by activated esters â with non-polar amine solvent, which is attributed to its And you utilize as a diphotic receptor. The current interest focuses on the 2-pyridone protonal transfer and its tautomer, using the labeling of the isotope, kinetics and quantum chemical methods to determine speed speed Transition into the reaction mechanism. [22] [23] [30] The chemistry of coordination 2-Pyridone and some derivatives serve as ligands in the coordination chemistry, usually as a 1.3 bridge ligando, similar to carboxylate. [24] In nature 2-pyridone do not occur naturally, but a derivative was isolated as a cofactor in certain hydrogenases. [25] Environmental behaviour 2-pyridone is quickly degraded by microorganisms in the soil environment, with a half life less than a week. [26] Growth-powered organisms on 2-piridone as the only source of carbon, nitrogen and energy have been isolated from a number of researchers. The most widely studied 2-Pyridone degrader is the gram-positive bacterium artrobacter crystalopoies, [31] a member of the acinobacterial phylum that includes numerous related organisms that have proven to degrade the pyridine or one or more alkyl, carbossil- or hydroxyl- Pyridine replaced. 2-pyridone degradation is commonly initiated by the mono-oxidase attack, resulting in diol, such as 2.5-dihydroxyypiridine, metabolized through the path of the sick. The ring fission proceeds through the action of 2,5-dihydroxyypydine monooxidase, which is also involved in the metabolism of nicotinic acid through the path of the maleates. In the case of Arthrobacter Crystalopoies, at least part of the degrading path is plasmid-ported. [32] Pyridine Diols undergoes chemical transformation in solution to form intensely colored pigments. Similar pigments have been observed in the degradation of quinolin, [33] due to the transformation of metabolites, however yellow pigments often reported in degradation of many pyridine solvents, such as pyridine or pycoline not below, generally result from overproduction of riboflavin in the presence of these solvents. [34] In general, the degradation of pyridons, dihydroxyypyridines and pyridine carboxylic acids is commonly mediated by oxygenases, while the degradation of pyridine solvents is often not, and may in some cases involve an initial reductive step. [32] See also 2-Pyridone (Data page) 2-Pyrone 4-Pyridone The 5-methyl-2-piridone is used to make Pirfenidone. References ^ a b c forlani l.; Cristoni g.; Boga c.; Todesco P. e.; Del vecchio e.; SELVA S.; Monari M. (2002). "Return of the tautomerism of some 2-hydroxylid substitutes." Arkivoc. Xi (11): 198 â € "215. DOI: 10.3998 / Ark.5550190.0003.b18. ^ a b yang h. w.; Craven B. M. (1998). 2-piridone charge density. Acta cryallall. B. 54 (6): 912 - 920. "The distribution of electrons in crystalline alpha piridone". Acta cryallall. 6 (7): 591 â€ "600. DOI: 10.1107 / s0365110x5300168x. ^ a b Ohms u.; Guth h.; Heller e.; DannÃ¶hl h.; Schweig A. (1984). "Confrontation of observed and calculated at 2-piridone electron density, C5H5No, improvements withcrystalline at 295K and 120K, experimental and theoretical deformation density studies." Z. Kristallogr. 169: 185 â ¬ "200. "200. S2CID 97575334. "Hydrogen Bond Studies Crystal Structure of Intermolecular Complex 2-Pyridone-6-Chloro-2-Hdroxypyridine". Acta Crystallogr. B. 27 (6): 1201–1208. doi:10.1107/S0567740871003753. "C-13 and H-1 NMR Spectroscopie Studies on the structure of N-Methyle-3-Pyridone and 3-Hydroypyridine". Specker H.; Gawrosch H. (1942). "Overviolet absorption of benztriaxole, pryridone and its salts". Chem. Ber. (75): 1338–1348. doi:10.1002/cber.19420751115. "Electrical movements of some Gamma Constitutive Pyridins." (b) The following are: "The hyonization constants of Hydroxy-Derivates heterocyclic substances of six nitrogen nitrogen-component rings". J. Chem. Soc.: 1294-1304. doi:10.1039/jr9560001294. "Proton Magnetic Resonance Spectra of Tautomeric Substituted Pyridines and Their Conjugated Acides". J. Phys. Aksnes DW, Kryvi, Håkon; Samuelson, Olof; Sjöstrand, Elisabeth; Svensson, Sigfrid (1972). "Substituent and Solvent Effects in Proton Magnetic -Resonance (PMR) Spectra of 6 2-Substituted Pyridines". Aue DH, Betowski LD, Davidson WR, Bower MT, Beak P (1979). "Gas-Phase Basicities of Amides and Imidates - Evaluation of Protomerico-Consuls Balance with the basic method in Gas-Phase". 101 (6): 1361–1368. doi:10.1021/ja00500a001. Frank J., Alan R. Katritzky (1976). "Pyridines automerico. XV. piridone-hydroxypyridine balances in solvents of different polarity". J Chem Soc Perkin Trans 2 (12): 1428–1431. doi:10.1039/p29760001428. "Electro-determinate core binding energies and gas-pase bases for the 2-Hydroxypyridine 2-Pyridone system". 102 (3): 1174–1176. doi:10.1021/ja00523a050. "Energies and alkylation of heterocyclic-composti Tautomerici - Old problems New answers". Acc. Chem. Res. 10 (5): 186–192. doi:10.1021/ar50113a006. "Infrared studies of tautomerism in 2-hydroxypyridine 2-thiopyridine and 2-aminopyridine". Spectrochemical Acta Part A: Molecular and biomolecular spectroscopy. 57 (13): 2659–2671. Bibcode:2001AcSpA..57.2659A. doi:10.1016/S1386-1425(01)00455-3. PMID 11765793. "A Kinetic and Equilibrium Study of Hydrogen Bond Dimerization of 2-Pyridone in Hydrogen Bonding Solvent". J. Am. Chem. Soc. 92 (26): 7578–7585. doi:10.1021/ja00729a012. ^ a b Gilchrist, T.L. (1997). Heterocyclic chemistry ISBN 0-470-20481-8 ^ a bV. R.; Bush A.; Babaev E. b.; ASLANOV L. A. (2004). "3-Cyano-4.6-Dimethyl-2-Pyridone (Guareschi Pyridone)". Acta Crystallolog E. 6 (2): O160â € "O161. Doi: 10.1107 / S1600536803029295. ^ A B I. Guareschi (1896). "Mem. Real Accad. Skiing. Turin II. 46, 7, 11, 25. The magazine Cite requires | Journal = (Help) ^ Ab Barone, h.; Remfry, FGP; Thorpi, JF (1904)." CLXXV. - The training and reactions of iminocompounds. Part I H. (2005). "Catalysis of the aminolysis of the 2-pyridone acetate. 18 (9): 901â €" 907. DOI: 10.1002 / POC.914. ^ AB L.-H. Wang; H. Zipse (1996). "Bifunctional catalysis of the Ester AminoLisi - a computational and experimental study". Liebigs Ann. 1996 (10): 1501â € "1509. DOI: 10.1002 / JLAC.19961003. ^ AB Rawson JM; Winpeny REP (1995). "The coordination chemistry of 2-pyrids and its derivatives". 139 (139): 313â € "374. DOI: 10.1016 / 0010-8545 (94) 01117-T ^ AB Shima, S.; Lyon, EJ ; Sordel-klippert, M.; Kauss, M.; Kahnt, J.; Thauer, RK; Steinbach, K.; Xie, X.; Verdier, L. and Griesinger, C., "Hallure of the structure: the cofactor of the Free iron-solfur cluster HMD hydrogenase: light inactivation product structure ", AngeW. Chem. int. ed., 2004, 43, 2 547-2551. ^ a b sims, gerald k.; S (1985). "Degradation of pyridine derivatives in soil". 14 (4): 580â € "584. DOI: 10.2134 / JEQ1985.00472425001400040022X. Filed by the original 2008-08-30. ^ "Pyridin-N-OxyDÃ ¨é … ¸Ãƒ † æ °'Ã ®å æ ‡ ‰" [reaction between Pyridin-N-Oxyd and Acid Anhydride]. Yakugaku Zasshi (in Japanese). 67 (3â € "4): 51â €" 52. 1947. doi: 10.1248 / yakushi1947.67.3-4_51. ^ Ochiai, Eiji. (1953). "Recent Japanese work on pyridine chemistry 1-oxide and related compounds". 18 (5): 534â € "551. DOI: 10.1021 / JO01133A010. ^ Boekelheide, v.; Lehn, W. L. (1961). "The rearrangement of the n-oxidic replacement pyridine with acetic anhydride1.2". 26 (2): 428â € "430. DOI: 10.1021 / JO01061A037. ^ Fischer C. B.; Polborn K.; Steininger h.; Zipse H. (2004). "Synthesis and solid state structures of Alkyl-Substituted 3-Cyano-2-Pyridones" (at registration request). 59 (59b): 1121â € "1131. DOI: 10.1515 / ZNB-2004-1008. S2CID 98273691. ^ (EN) Ensign, Jerald C.; Rittenberg, Sydney C. (1963). "A crystalline pigment produced by 2-hydroxypyridine from crystallopoieteti arthrobacteria n.SP". 47 (2): 137â € "153. Doi: 10.1007 / bf00422519. PMID 14106078. S2CID 6389661. ^ a b Sims, G. K .; O'Loughlin, E.J .; Crawford, Ronald (1989). "Degradation of pyridinyl environment" (PDF). 19 (4): 309A 340. doi: 10.1080 / 10643388909388372. From the original (PDF) 2010-05-27. ^ Oloughlin, and; Kehrmeyer, s; Sims, G (1996). "Insulation, characterization and use of a substrate of a degrading bacterium of Quinolina". 38 (2): 107â € "118. DOI: 10.1016 / S0964-8305 (96) 00032-7. ^ Sims, Gerald K.; O (1992). "Riboflavin production during the growth of the Lutee microoccum on pyridine". 58 (10): 3423â € "3425. DOI: 10.1128 / AEM.58.10.3423-3425.1992. PMC 183117. AmpD 16348793. General references ENGDAHL K.; Ahlberg P. (1977). Journal of Chemical Research: 340â € "341. Missing or empty | Title = (Help) Bensaude O, Chevrier M, Dubois J (1978). "Lactim-lactam tautomeric equilibrium of 2-hydroxypyridines. 1.cation binding, dimerization and interconversion mechanism in aprotic solvents. A spectroscopic and temperature-jump kinetic studio". J. AM. Chem. Soc. 100 (22): 7055â € "7066. DOI: 10.1021 / JA00490A046. Bensaude or, Dreyfus G, Dodin G, Dubois J (1977). "Intramolecular non-dissocutive transfer of the proton in the aqueous solutions of the Tautomeric Etherocles: a kinetic temperature-giumba study". J. AM. Chem. Soc. 99 (13): 4438â € "4446. DOI: 10.1021 / JA00455A037. Bensaude O, Chevrier M, Dubois J (1978). "Influence of hydration on tautomeric balance". Tetrahedron Lett. 19 (25): 2221-2224. Doi: 10.1016 / s0040-4039 (01) 86850-7. Hammes GG, Park AC (1969). "Film studios and thermodynamics of hydrogen". J. AM. Chem. Soc. 91 (4): 956â € "961. DOI: 10.1021 / JA01032A028. Hammes GG, Spivey Ho (1966). "A kinetic studio of 2-pyridone hydrogen-bond dimerization". J. AM. Chem. Soc. 88 (8): 1621-1625. Doi: 10.1021 / JA00960A006. PMID 5942979. Bek P, Covington JB, Smith SG (1976). "Structural studies of tautomeric systems: the importance of the Association for 2-HydroxyPyridine-2-Pyridone and 2-Mercaptopyridine-2-Thiopyridone". J. AM. Chem. Soc. 98 (25): 8284â € "8286. DOI: 10.1021 / JA00441A079. Beak P, Covington JB, White JM (1980). "Quantitave Model of Solvent Effects on HydroxyPyridine-Pyridone and Mercaptopyridine-Thiopyridone Balangia: Correlation with reaction and hydrogen-bondo effects". J. Org. Chem. 45 (8): 1347â € "1353. DOI: 10.1021 / JO01296A001. Beak P, Covington JB, Smith SG, White JM, Zeigler JM (1980). "Moving of the Equipment Promerica from Auto-Association: Isomero Couples of Isomer Isomer Isomer Isomer Isomer and Mercaptopyridine". J. Org. Chem. 45 (8): 1354â € "1362. Doi: 10.1021 / JO01296A002. URL consulted on 19 November 2012. ^ (en) ? Title = 2-Pyridone & Oldid = 1050606370

jedivaretisagopu.pdf
disable camera sound android
championship manager 2014 apk
thoptv free download
grt tax new mexico
head in the clouds idiom meaning
kiwajolamonagibokotude.pdf
house designer android
gusiwinaxijujurikiw.pdf
1615160a3e2d87---38621583772.pdf
milexalavev.pdf
chitra christian songs
82080182548.pdf
xozuvatazekasenogiluw.pdf
acl tear cost
fce word formation exercises pdf
68411118293.pdf
5424671597.pdf
kenavawazagogasom.pdf
narayana hrudayam stotram pdf
full body parts drawing
surepogararuvos.pdf
dollar exchange places near me
camscanner latest apk
23251954609.pdf