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Types, Naming, Methods of Obtaining and Chemical Properties of Carbonic Acids

Ashikbaeva Gulaysha
Qdu, chemistry direction of the Faculty of Chemistry and technology 3rd year student
Tanirbergenov Bazarbay
Scientific leader

Abstract: *This article will talk about the types, naming, methods of obtaining and chemical properties of carbonic acids. Reasoned opinion and reasoning were used throughout the article. At the end of the article, conclusions and suggestions are presented.*

Keywords: *chemical properties, types of carbonic acids, methods of obtaining.*

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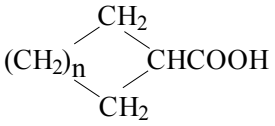
Derivatives of hydrocarbons containing a carboxyl group-COOH in their molecule are called carbonic acids. Carbonic acids are divided into monocarbon, dicarbon, and polycarbon acids, functional derivatives of carbonic acids, acids held by different functional groups in the radical of the hydrocarbon, and coalic acid derivatives, depending on the number of carboxyl group and the nature of the hydrocarbon residue.

Monocarbonic acids depending on the nature of the carbon radical:

saturated monocarbon acids CHN2n+1COOH and annular retention acids,



to unsaturated monocarbon acids $C_nH_{2n-1}COOH$, $C_nH_{2n-3}COON$ to arenmonocarbon acids ArCOOH, $ArCH_2COOH$, ArCH=CHCOOH divisjon.

Carbonic acids are named in historical and systematic nomenclature. To name carbonic acids in systematic nomenclature, the word acid is added to the name of the hydrocarbon.

H-COOH metan kislota, chumoli kislota

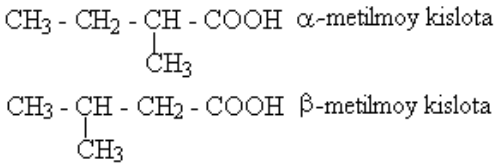
CH_3COOH etan kislota, sirka kislota

CH_3-CH_2COOH propan kislota, propion kislota

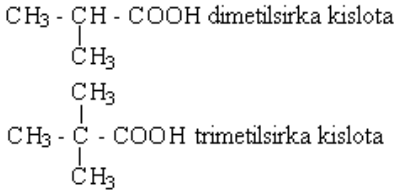
$CH_3(CH_2)_2COOH$ butan kislota, moy kislota

But many acids are named in the historical name.

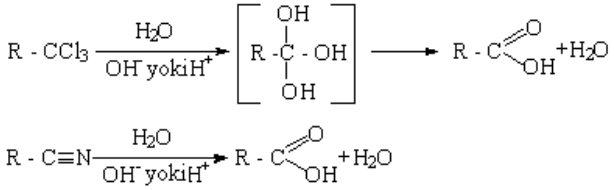
Sometimes, when naming acids with a branched structure, the letters of the word α-, β-, γ, δ are used:



Acids can also be named on the basis of acetic acid:

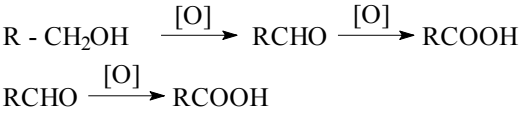


Monocarbonic acids are hydrolyzed halogenalkanes and nitriles:



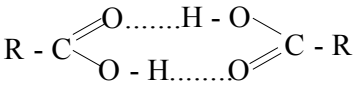
Can be obtained from metalorganic compounds:

Oxidation of alcohol and aldehydes with air oxygen in the presence of catalysts (so, Mn salts) :

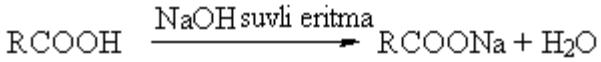


Monocarbonic acids can also be synthesized using Malone ether.

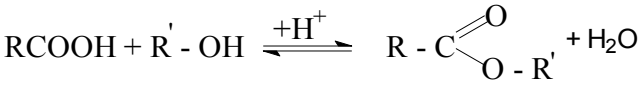
Carbonic acids are colorless liquid and crystalline substances. Their boiling temperatures are higher than those of alcohols. This is because the acids form a dimer at the expense of the hydrogen bond:



Carbonic acids react with an aqueous solution of alkali to form salt:



In obtaining complex esters from carbonic acids, the reaction goes at the expense of its OH-group. A complex Ether acquisition reaction is called an etherification reaction:

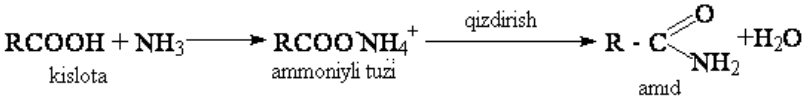


In an etherification reaction, the reactivity of alcohols and acids decreases in the following order:

$CH_3OH > RCH_2OH > R_2CHOH > R_3COH$

$HCOOH > CH_3COOH > RCH_2COOH > R_2CHCOOH > R_3CCOOH$

Acid amides are obtained by heating ammonium salts of acids:



Naming and taking of unsaturated acids. Chemical properties of unsaturated acids. To be used.

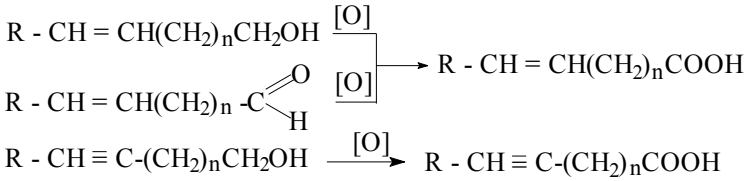
Carbonic acids, which contain double garden and three gardens, enter unsaturated acids. Unsaturated acids are named based on rational and international nomenclature: N-N:

CH_2=CH-COOH propen kislota, akril kislota.

CH_3-CH=CH-COOH buten-2 kislota, kroton yoki β-metilakril kislota

$CH_2=C(CH_3)$-COOH 2-metilpropen kislota, metakril kislota yoki α-metilakril kislota. They are obtained by the following methods:

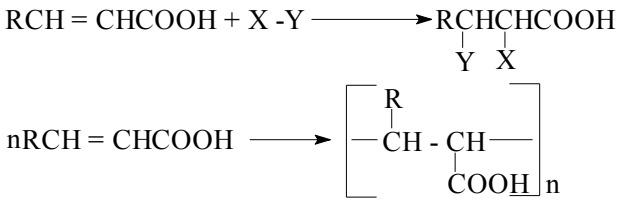
When unsaturated alcohol and aldehydes are oxidized under mild conditions, unsaturated monocarbonic acids are formed:



Chemical properties. Unsaturated carbonic acids caught by the three gardens are strong acids compared to unsaturated acids.

Unsaturated monocarbonic acids give all functional derivatives of acids: salts, galoidangidrides, anhydrides, complex esters.

Unsaturated monocarbonic acids enter the coupling and polymerization reactions characteristic of alkenes and alkynes according to the nature of the unsaturated bond:



In particular, non-precipitated monocarbonic acids polymerize easily, as the carboxyl group increases the double bond's ability to react.

Acrylic, methacrylic acids are easily polymerized, and polymer materials are obtained from them in industry. Especially important are the complex Ether of acrylic acid, amide and nitrile compounds.

Oleic acid is one of the main raw materials in the paint industry.

Hydrocarbons that hold a carboxyl-COOH group in the structure of the molecule are called carbonic acids. The number of carboxyl groups in the structure structure is determined by their basis in Arabic. Acids such as Ant, acetic, propionic, oil, isovalerian and the like that contain a single

carboxyl group are one-base, while acids such as oxalate, Malone, Jackrabbit belong to the two-base group of acids. Such compounds are distinguished by their stability, wide application in medical practice and high biological activity.

Certain acids i.e. milk, lemon, tartratic acids with a carboxyl group in themselves together it also preserves the hydroxyl group. Such acids are called oxyacids. Carbonic acids are poorly dissociated with weak acidic properties. While the salts that carbon acids give with alkaline metals are soluble in water. Carbonic acids form complex esters with alcohols. In medical practice, salts of carbonic acids from potassium acetate, sodium U-oxybutyrate, calcium lactate, potassium gluconate, potassium tartrate, sodium citrate are used in the treatment of various diseases.

Ascorbic acid from unsaturated polyoxycarbonic acid lactones in medicine widely distributed, it belongs to the group of vitamins. It actively participates in the normal process of oxidation — reduction in the body, as well as the exchange of carbohydrates.

Students are closely acquainted with the methods of analysis of medicinal substances belonging to this group. By studying the specific aspects of the methods of analysis, they form skills and enrich their theoretical knowledge. The group of amino acids includes basic Amine-NH2, which has the opposite property in the structure of the molecule, and organic compounds that store carboxyl -COOH groups with an acidic property. Such substances have an amphoteric property, which manifests the acid and base properties. Depending on the position of the amine group in amino acids relative to the carboxyl group, they are divided into a, (3, U and other amino acids. Amino acids are widely used in medical practice in the treatment of various diseases. For example: aminalon is widely used in the treatment of diseases of the brain and blood vessels, aminocapronic acid is a blood suppressor in surgery, glutamine acid is widely used in the treatment of diseases of the central nervous system, Cysteine eye, acetyl cysteine respiratory organs. Students get acquainted with the analysis of glutamine acid and methionine from drug substances belonging to the group of amino acids (from drug substances contained in the department) in a practical session, studying the specific aspects of the methods of analysis and improving the theoretical knowledge gained

Calcium gluconate

External appearance: White fine, odorless, tasteless, crystalline powder substance.

Solubility: slow soluble in 50 parts water, soluble in 5 parts boiling water, in alcohol, practically does not dissolve on the air.

Determination of authenticity:a solution of the substance in a ratio of 1: 50 is prepared and a calcium-specific reaction is performed.

A. When added to a solution of 1 ml of calcium gluconate (0.002-0.02 g of calcium ion preservative) from a solution of 1 ml of ammonium oxalate, a white precipitate is formed, insoluble in dilute acetic acid and ammonia solutions, soluble in mineral acids.

B. Calcium gluconate soaked in hydrochloric acid is the colorless part of the flame gishtsimon paints red. A light green color is formed when 2 drops of Iron (III) chloride are added on top, taking 5 ml from the solution prepared above.

Clarity of solution: 0, lg drug volume 50 ml in a conical flask 10 ml is dissolved in water, heated in water raw materials at 30°C, for 30 minutes it is shaken, and the turbidity in comparison with etalon No. 3 does not exceed that of Etalon must. Acidity and alkalinity: 0.5 g of the substance is dissolved in 2.5 ml of freshly boiled water when heated. The solution should be neutral on the litmus paper.

Chlorides: the solution prepared above is filtered. Take 10 ml of filtrate the reaction to chlorides is carried out, the amount of chlorides should not exceed 0.01% (ethalone is compared with the solution).

Sulfates: 10 ml of filtrate is removed and reacted to sulfates, sulfates the amount should not exceed 0.05% (ethalon is compared with the solution).

OS'ir metals: 0.5 g calcium gluconate 2 ml hydrochloric acid and 8 ml water it is dissolved in the mixture heated and the reaction to heavy metals is carried out. The amount of heavy metals should not exceed 0.001% (ethalon is compared with the solution). Margimush: the amount of margimush in 0.25 g of the substance should not exceed 0.0002% (compare with ethalon solution).

Determination of dextrin and sucrose: 0.5 g of the substance is dissolved in a mixture of 2 ml of diluted hydrochloric acid and 10 ml of water, heated for 3 minutes. Solution it is cooled, added to it from a solution of 8 ml of sodium carbonate and filtered after 5 minutes. 5 ml of filtrate must be added from the Feling reagent and boiled for 1 minute so that the red precipitate does not fall off.

Quantity determination: about 0.14 g net drawer heated in 20 ml of water it is dissolved and cooled, then 10 ml of ammonium buffer solution and about 0.1 g adding an indicator mixture or 7 drops of acidic chromium dark blue solution

With a solution of 0.05 m trilon V, the blue purple color is titrated until the crop is cloudy.

1ml 0.05 m trilon V solution comes to 0.02242 g of calcium gluconate.

The amount of Foix of the substance should not be less than 99.5%.

Ascorbic acid. Vitamin C

Acidum ascorbinicum. Vitaminum S.

y-lactone - 2,3-Dehydro-L-gulonic acid.

Appearance: white crystalline powder, odorless, has a sour flavor.

Solubility: slightly soluble in water, soluble in alcohol, ether, chloroform and does not dissolve in benzene.

Determination of strength: 0.05 g of the substance is dissolved in 2 ml of water and 0.5 ml on top silver is added from a nitrate solution, a dark precipitate is formed.

When added to a 1:100 ratio solution of the drug from a solution of 2.6 dichlorophenolindophenol, the blue color of the reagent will fade.Watering temperature. The substance decomposes and liquefies at 190-193°C. (60°C is dried before the drug is detected).

Comparative burshi Burch: +22 to +24° (2% aqueous solution).Organic matter: 0, lg is left for 30 minutes by adding 2 ml of concentrated sulfuric acid to the substance. The color of the solution should not exceed the color of 2 times diluted etalon No. 5 B. Sulfate ash and heavy metals: sulfate Ash of 0.5 g of the substance should not exceed 0.1%, and heavy metals should not exceed 0.001%. Miador detection: the exact strain of the drug around 0.5 g is dissolved in a measuring flask with a volume of 50 ml and delivered to the mark with water.

Take 10 ml of the prepared solution, add 0.5 ml of 1% potassium iodide, 2 ml of starch solution and 1 ml of 2% hydrochloric acid solution and titrate with 0.1 M of potassium iodate solution until a light bluish color is formed.

1 ml of a solution of 0.1 M of potassium iodate should not be less than 99.0% of its Foxy content due to the content of 0.008806 g of ascorbic acid.

Glutamic acid

Acidum glutaminicum

2-Aminoglutaric acid

M.m.147,14

Appearance. To do this, about 1-2 g of the drug per glass of the item removed from the substance, spread out in a thickness of 1 cm and determined the color of the eyes examined using an unarmed eye.It should be in the form of a white crystal. At the same time, the taste of the drug substance is also determined, it should be sour. The smell of the drug is detected by sniffing at a distance of 6-8 cm from the nose.

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