

кольору шкіри. По-третє, ноосфера не може бути збудована до припинення війн між народами світу.

Список використаної літератури

1. Вернадский В.И. Химическое строение строение биосферы Земли / В.И. Вернадский – М. – 1997. – 149с.
2. Моисеев Н.Н. Человек и ноосфера / Н.Н. Моисеев. – М. – 1993. –118с.
3. Філоненко І. Володимир Іванович Вернадський / І. Філоненко // Хімія. Шкільний світ. – 2013. – №7 (715). – С.4-5.

HYDROXY AND KETO ACIDS PRODUCTS OF METABOLISM AND COMPONENTS OF MEDICINAL PRODUCTS

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While studying the topic "Study of the reactivity of heterofunctional compounds" in the context of the discipline of Biological and Bioorganic Chemistry (specialty "Dentistry") pays special attention to hydroxy acids. Organic compounds: hydroxy and keto acids - substances involved in metabolic processes. Many redox reactions in the body are associated with the formation and participation of hydroxy- and keto acids (oxidation of carbohydrates and fatty acids, the tricarboxylic acid cycle, transamination of amino acids, etc.). Complex biological systems are determined by the properties of simple organic functions, knowledge of the chemical properties of functional groups helps to predict the properties of physiologically active substances.

Note the significant role of hydroxy acids in metabolic processes. Thus, lactic acid formed during glycolysis is oxidized during respiration to pyruvic acid and it is the complete oxidation of this compound to CO₂ and H₂O releases the bulk of energy concentrated in carbohydrates and provides this energy to the body, especially muscular system. Hydroxy acids are involved in the transformation of the tricarboxylic acid cycle - the oxidation of acetic acid to CO₂ and H₂O during the aerobic phase. As a result of this process the main mass of energy of carbohydrates, lipids, proteins is released. However, the importance of the tricarboxylic acid cycle is not limited to a crucial role in providing the body with energy. Oxidation of acetic acid produces intermediates that are used for various biosynthetic processes.

The study of the structure and chemical properties of hydroxy and keto acids is the basis for understanding their metabolic transformations in the body. Thousands of extremely diverse chemical processes and reactions (oxidation, hydration, decarboxylation, etc.) take place simultaneously in the body in any cell, tissue, or organ. These reactions are part of a single whole, they are interconnected, conjugate. Each of these reactions is due to the structure of the organic compound, which determines the chemical properties of this compound.

When considering the concept of optical isomerism, which is related to the spatial structure of molecules and is manifested by the biological action of one of the enantiomers, while the other enantiomer may be completely inactive, although their chemical properties are the same. Thus, the antitumor drug sarcolysin is a left-handed enantiomer, and the right-handed enantiomer of sarcolysin is not active, which is explained as follows. The activity of drugs is manifested in their interaction with cell receptors. In this case, the drug molecule must have a configuration that would allow the most complete binding to the receptor. Macromolecules of biological catalysts - enzymes constructed from L- α -amino acids, ie from chiral molecules, interact only with those substrates that also have a certain configuration. The chiral reagent is sensitive to the chirality of the molecules that react with it, in this regard, enzymatic reactions are very specific.

The biological role of keto acids in the body is very large and therefore it is given much attention. Thus, pyruvic acid (PAC) is a product of glycolysis. Due to the presence of a keto group, which is characterized by a reduction reaction, PVC reacts with the reduced form of NAD + (NADH + H +) and is converted into the final product of glycolysis - lactic acid. Pyruvic acid under respiratory conditions

is subject to oxidative decarboxylation (property inherent in the group -COOH) and converted into the active form of acetic acid - acetylcoenzyme A. In hypoxia (lack of oxygen) is the reduction of pyruvic acid in lactic acid under the action (NADH + H⁺). The accumulation of lactic acid can have a negative effect on the body, in particular, weaken muscle contraction - there is a characteristic pain. During rest, oxygen reserves are restored, and lactic acid is oxidized to PVC. Keto acids are involved in the processes of energy metabolism in the body and in various processes of biosynthesis.

A number of derivatives of heterofunctional compounds are drugs. Benzoic acid is one of the oldest medicines. Has an antiseptic effect, used as an external antimicrobial and fungicidal agent. In the form of sodium salt is used as an expectorant. In the human body, benzoic acid is the end product of the oxidation of fatty acids with an odd number of carbon atoms.

The introduction into the molecule of benzoic acid structural fragments of glycine, pyrazole, pyridine suggests that these derivatives will have anti-inflammatory, analgesic effect, because the combination in one molecule of two biologically active centers by cation-anionic bond allows to enhance the action of components, increase solubility. Some aromatic acids contain a carboxyl group in the side chain (phenylacetic acid). Both benzoic and phenylacetic acids are the most important products of metabolism, are part of many drugs, for example, the "gold standard" in the treatment of inflammatory processes is diclofenac sodium (voltaren).

Phenyl salicylate, passing through the stomach does not change, and in the alkaline environment of the intestine is saponified with the formation of salts of salicylic acid and phenol, which determine the therapeutic effect.

Using the ability of phenyl salicylate not to dissolve in the stomach, it is often used as a coating material for tablets, so that if necessary, they do not change in the stomach and secrete ingredients in the intestine. Salol is used as an antiseptic for intestinal diseases.

By phenolic hydroxyl salicylic acid forms esters with acids. The ester of salicylic acid with acetic acid (aspirin) is formed by the interaction of salicylic acid with anhydride or acetic acid chloride.

Therefore, the study of the structure and chemical properties of hydroxy and keto acids is the basis for understanding their metabolic transformations in the body and use as drugs.

ВИВЧЕННЯ РЕАКЦІЙ НУКЛЕОФІЛЬНОГО ВІНІЛЬНОГО ЗАМІЩЕННЯ ГАЛОГЕНУ У ЧЕТВЕРТИННИХ ПІРИДИНІСВИХ СОЛЕЙ СН-КИСЛОТАМИ

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Актуальність дослідження. Різноманіття тактик та стратегій сучасного органічного синтезу з великим успіхом дозволяє вирішити різноманітні практичні задачі, в тому числі і синтез нових гетероциклічних сполук з комплексом практично цінних біологічних властивостей. Значним синтетичним потенціалом відзначаються солі 2-галогено-N-бензілпіридинію, які не втрачають своєї актуальності та важливості і дотепер, хоча відомі з середини ХХ ст. Їх використання у різноманітних типах реакцій та з широким спектром реагентів відкриває доступ до нових класів сполук. Проте синтетичний потенціал солей 2-галогено-N-бензілпіридинію до кінця не вивчений. Отримані на основі таких солей конденсовані гетероциклічні системи з вузловим атомом Нітрогену (індолізини) характеризуються широким спектром фармакологічних властивостей. Ці сполуки володіють виразною антибактеріальною, протипухлинною, протизапальною, анальгетичною, протівірусною дією. Крім того, деякі з них – потужні антиоксиданти, що інгібують процеси перекисного окиснення ліпідів [1].

Метою роботи є розробка нових методів синтезу дослідження хімічних властивостей солей у реакціях із С-нуклеофілами – похідними ацетонітрилу.

Завдання роботи:

- проаналізувати літературні джерела щодо отримання солей Мукаями та вивчення їх реакційної здатності;