



Conductometric Titration of Acids in Mixed and Non-Aqueous Solutions

Нарбек Сапаевич Палванов,

кандидат химических наук.

**Ибодуллаева Мукаддас
Олимбоевна**

Ургенчского филиала Ташкентской медицинской академии
кафедра “Естественных наук”

**Атаджанова Замира
Юсуповна**

Ургенчского филиала Ташкентской медицинской академии
кафедра “Естественных наук”

**Куваниш Турсун оглы
Ережепбаев**

Студент Ургенчского филиала Ташкентского медицинского
академии

ABSTRACT

In given work happen to the results of the determination carbon acids in mixed and non-aqueous solution by method conductometry titrating acid-main. The Explored influence chemical and physical characteristic of the solvents in condition acid-main titrating. The linear dependency will Revealed between constant of acidity and value non electry permeability. The Value of the constant autoprotolys solvent also is an important factor for choice of the solvent for acid-main titrating.

Keywords:

Analysis, determination, titrimetry, conductometry, autoprotolysis constant, dielectrical permeability, reproductoin.

Relevance. It is known that acids play an important role in the life of living organisms and in industry. A change in their concentration in the body leads to various disorders. Therefore, it is relevant to control their content in the body, in industrial processes, etc.

Conductometric titration occupies a special place among the methods for determining acids. It is quite simple, accessible and accurate. This method can be easily implemented in the laboratory of chemical analysis of food enterprises and other industries. [1,5,10].

Materials and methods of research

Formic, acetic, benzoic, aminoacetic, aminobenzoic (m- and p-) acids, DL-(-alanine and other carboxylic acids) were selected as objects. Carboxylic acids were titrated with solutions of potassium isopropoxide in solvents of different nature (ethanol, propanol-2,

dimethylformamide, acetonitrile, chloroform-acetone, anhydrous acetic acid) [2,4,5,6]. Amino acids were titrated both according to the reaction of the carboxyl group and according to the reaction of the amine group. Amino acids were titrated according to the reaction of the carboxyl group in a mixed solvent medium of water-propanol-2, water-acetone (1:19) with a solution of potassium isopropoxide, and also in anhydrous acetic acid with a solution of potassium acetate. According to the reaction of the amino group, the amino acids were titrated with a solution of perchloric acid. The accuracy of determination of amino acids in anhydrous acetic acid is more accurate than determinations in isopropanol solution. [8,9].

A study of the influence of the chemical and physical properties of solvents on the conditions of acid-base titration revealed a linear relationship between the acidity constant and the dielectric constant. The value

of the autoprotolysis constant of the solvent is also an important indicator for choosing a solvent for acid-base titration.

Results and discussions.

Studies have shown that the lower the autoprotolysis constant of a solvent, the more differentiating it is. Therefore, for differentiated titration of acids, the value of the dielectric constant and the autoprotolysis constant of the medium should be reduced, which can be achieved by adding a solvent with lower values of the dielectric constant and the autoprotolysis constant to the appropriate solvent. [7,3,10]. In this work, we titrated both individual acids and binary, ternary, and quaternary acid mixtures (including mixtures with mineral acids) in solvents with lower dielectric permittivity and autoprotolysis constant.

Findings

1. The possibility of conditions for conductometric titration of carboxylic, aminocarboxylic acids with solutions of potassium isopropoxide, which exhibit strongly pronounced basic properties in water-mixed and non-aqueous media on the basis of estimated and known acidity constants of the studied acids, is shown.

2. A linear relationship has been established between the acidity constants of substances and the value of the dielectric constant of the medium. It is shown that there is a linear relationship between the acidity constant of substances and the autoprotolysis constant, as well as the dielectric constant of the medium. An increase in the autoprotolysis constant and a decrease in the dielectric constant lead to a decrease in the strength of dissolved carboxylic and aminocarboxylic acids and, consequently, to an increase in the differentiating effect of the solvent.

Literature

1. Smolova N.T., Burmistrova T.I., Kreshkov A.P. Differentiated titration of aliphatic monocarboxylic acids // Zh. analyte chemistry. 1975, Vol. 30, No. 9. - S. 1805-1808.

2. Golubitsky G.B., Budko E.V., Basova E.M., Kostarnaya A.V., Ivanov V.M. Stability of ascorbic acid in aqueous and aqueous-organic solutions for quantitative determination // Zh. analyte chemistry. 2007, Vol. 62, No. 8. -S. 1254-1259.
3. Zaitsev V.N., Kobylinskaya I.G., Kostenko L.S., Gerda V.I. Conductometric determination of the concentration of acid sites on functionalized materials // Zh. analyte chemistry. 2008, V.63, No. 8. -S. 852-859.
4. Radushev A.V., Chekanova L.G., Gusev I.Yu., Sazonova E.A. Determination of hydrazides and 1,2-diacylhydrazines of aliphatic carboxylic acids by conductometric titration // Zh. analyte chemistry. 2000, V.55, No. 5. -S. 496-499.
5. Khudyakova T.A., Vostokov V.M., Tarasova T.N. Conductometric method of acid-base titration of bifunctional compounds in aqueous-organic and non-aqueous solutions // Fiz.-khim. methods of analysis (Gorky). 1978, No. 3. -S. 49-51.
6. Rao T.S., Rao M.S.P. Titrimetric and Spectrophotometric Methods for the Determination of Glyoxal and Analysis of Ternary Mixtures of Its Oxidation Products, Zh. analyte chemistry. 2005, Vol. 60, No. 8. -S. 806-810.
7. Faizullaev O., Faizullaev O.O. Determination of some inorganic and organic components of wastewater // Actual problems of analytical chemistry: Proceedings. report All-Russian. conf. - M.: 2002. -S. 145.
8. Fayzullaev O., Polvonov N.S. Acid-base titration of polybasic carboxylic acids in aqueous, mixed and non-aqueous solutions.// Analytics and control. Yekaterinburg, 2004, vol. 8, no. 2. - pp. 118-120.
9. Faizullaev O., Polvonov N.S. Titrimetric determination of amino acids. // Analyst kimyo wa ecology dolzarb muammolari. II Resp. ilmiy-amaly conf. mater. Samarkand: 2006, -p.20-21.

10. Mchedlov-Petrosyan N.O. Differentiation of the strength of organic acids in true and organized solutions // Zh. analit. chemistry. - 2006. - T. 61. - No. 3. - S. 329-330.