

speed of disposal of the active substance by a pharmaceutical form, its absorption in the body, its transport to the site of action and its biological response.

**Aim of the study.** Advanced bibliographic study on the diversity of methods used in the study of bioavailability of ear drops.

**Materials and methods.** 87 abstracts and scientific articles from the Cochrane Electronic Library, MEDLINE databases, CAB Abstracts © and SciSearch © The Thomson Corporation.

**Results.** The bibliographic evaluation of the sources studied has highlighted the importance of the basic physico-chemical characteristics of the drug substances incorporated in the pharmaceutical form, which directly influence the bioavailability. For example: drugs with high molecular weight or high electrical charge cross the blood-brain barrier (inner ear membrane) with passive difficulty, as well as protein-binding substances, while high liposolubility of drug substances facilitates passage. It has been established that there are several methods used to investigate the bioavailability of active principles from ear drops, using Franz diffusion vertical cells. Animal skin is often recommended for preliminary evaluations of new formulations as a membrane for yield. Animal models used to replace human skin are domestic pigs, rats, mice, guinea pigs and snakes. Thus, 26% of the evaluated sources propose the use of the skin of newborn pigs. In most articles (68%) it is proposed to use the skin on the inner side of the pig's ear, as results are comparable to those obtained on human skin due to similar thickness, vascular anatomy and arrangement of collagen fibers in the dermis of the ear, as well as due to the identical glycosphingolipid and ceramide content. The bioavailability assessment is done by determining the concentration of the substances (usually by chromatographic or spectral methods) at equal intervals in the yield medium.

**Conclusions.** Bioavailability is extremely important for the preformulation and drug formulation process, and the correct selection of the *in vitro* determination method facilitates the correlation of results with those obtained *in vivo*.

**Key words:** Bioavailability, ear drops, test methods.

#### **410. CONTRIBUTION TO THE STUDY OF THE QUALITY OF DRINKING WATER SOURCES IN THE SOUTHERN DISTRICTS OF THE REPUBLIC OF MOLDOVA**

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**Introduction.** Water use is multiplied. The closest concern is for drinking water for which the insurance conditions are quite special, are regulated by the state by norms and standards. The present paper presents data and information on the quality of drinking water sources in the southern districts of the Republic of Moldova such as Cahul, Taraclia and Cantemir.

**Aim of the study.** Control and monitoring of water quality in order to verify that the water distributed to the consumer is in accordance with the quality requirements and does not create risks for the population's health.

**Materials and methods.** Laboratory data obtained by physico-chemical and microbiological analysis, normative acts regarding drinking water and its quality.

**Results.** As a result of the laboratory investigations of the water samples taken from the water sources in the southern districts of Moldova (Cahul, Cantemir, Taraclia), most of them

correspond to the sanitary regulations, and in some cases they challenge the non-compliance of the sanitary norms with the physico-chemical and microbiological indices.

**Conclusions.** The sources that provide the drinking water in the southern districts of the Republic of Moldova have to be monitored by taking water samples and laboratory analysis. If the laboratory analyzes indicate water that does not meet the drinking conditions, its use for human consumption will be prohibited, especially for children, as well water treatment measures should search for other sources of guaranteed drinking water that meet the sanitary norms. Water is a precious and common good to mankind, because of its importance for the health of the population and the development of society protective measures are required.

**Key words:** Drinking water, quality, south, population health.

#### 411. REDOX VS NEUTRALIZATION TITRATIONS FOR DETERMINATION OF ASCORBIC ACID'S CONCENTRATION IN FOOD SUPPLEMENTS

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**Introduction.** Ascorbic acid is required for the optimal activity of several important biosynthetic enzymes and it is therefore essential for various metabolic pathways in the body. The recommended dosage for men is 90 mg per day and for women 75 mg per day. During pregnancy, it takes about 85 mg per day while breastfeeding 120 mg per day. Tobacco destroys vitamin C in the body, because of which smokers should consume up to 200 mg per day. However, there are several categories of the population, which cannot provide optimal amounts of all necessary nutrients through the food. In these situations, the use of supplements can help. European regulation provides that any supplement of ascorbic acid may be one of five compounds: L-Ascorbic Acid, Sodium-L-Ascorbate, Potassium-L-Ascorbate, Calcium-L-Ascorbate, and L-Ascorbyl-6-Palmitate. According to the legislation, in the Republic of Moldova, the state quality control of food supplements is not mandatory, being based on the quality control of producer. In this context, it becomes appropriate to prove the content of ascorbic acid in food supplements.

**Aim of the study.** Evaluation of redox and neutralization methods of quantitative determination of ascorbic acid in food supplements.

**Materials and methods.** Electronic databases: Medline, Cochrane, Embase and Springer were accessed using "vitamin C analysis", "ascorbic acid assay" and "vitamin C quantitative determination". Also, the search was conducted by using printed pharmaceutical and chemical journals. 108 bibliographic sources were eligible for our study.

**Results.** For the determination of ascorbic acid, a wide range of techniques and methods is available, each with its own advantages and disadvantages. In most of the articles (65%), alkalimetric method was used in order to determine the content of ascorbic acid in food supplements. It is an acidic compound due to the facile ionization of hydroxyl group on carbon 3 ( $pK_a = 4.17$ ) while the hydroxyl group on carbon 2 is much more resistant to ionization ( $pK_a = 11.79$ ). Also, most frequently (35%) the iodometric method was applied. As the iodine is added during the titration, the ascorbic acid is oxidised to dehydroascorbic acid, while the iodine is reduced to iodide ions.

**Conclusions.** Both alkalimetric and iodometric methods were applied successfully for the determination of ascorbic acid in food supplements. The iodometry was more accurate than